

February 21, 1964
Above Jaruma

Afternoon. Working in area above Jaruma where I saw several behaviors among Bruns and lots of singing by CC's. Arrive 3:40. Overcast. Cold. Windy.

Lots of Indians around!

No red tubular flowers here now.

Brun

3:50. See single Brun. Flying quite rapidly from bush to bush in thick scrub along edge bare crop field. Definitely being followed and joined by small brown bird (furnariid? House Wren?). See at least 3 separate examples of joining. As far as I can tell, the Brun is capturing its attendant.

4:05. See a single through alone. Dull gray brown. Moderately dark. Yellow-bell. Yellow-orange legs. No bright eye-ring.

Brun

4:30. See a single Brun. Alone & silent. Feeding on pink geraniums. (It must be hard up!)

There are really quite a lot of birds around here now. But they are staying under cover and are very difficult to identify.

W A single CC flycatcher. Alone. Uttering thin high "freet" notes. This bird was really very blue-gray underneath.

See 2 Orange-billed Saltators in scrub. Probably essentially alone — altho there were also some Andean Sparrows in the same or nearby bushes.

4:45. See another single through alone. Almost certainly the same species (but not the same individual) seen earlier. But this time I notice that the bird has a definitely light forehead (but not quite white, and intergrading with the darker color of the rest of the head).

(9)

See still a third single thrush alone. Again almost certainly same species. Forehead light, altho far from white (possibly forehead slightly streaked).

5:15. See 2 more thrushes alone

Still more single thrushes, and pairs, alone. All at distance. Apparently all same species.

See a single wren alone. Apparently House Wren

5:22. Starting to rain.

See a pair of wrens. Apparently alone. Repeating & singing.

U " 5:34. Hear a brief burst of what sounds like C song. Half "mini-twitter", half obvious triplet. Typical phrase probably "Ta-a-zee ta-a-zee ta-a-zee ta-a-zee"

Last 2 trisyllables quite clear and distinct. But 2 uttered so rapidly as to be almost indistinguishable. Songs coming from Eucalypt where C sang on previous trip.

Leaving 5:50 p.m., as rain getting stronger.

It certainly doesn't look as if anything is breeding here now.

February 2, 1964
Below Palca

Going to work at relatively low altitude - almost the lowest place I visited on the last trip - where I saw the *Thlypopsis*. Along edge of river. Arrive 5:30 a.m. Clear. Just beginning to get light. I think I can hear a few birds (over the roar of the stream) in the distance, but can't identify them.

Quite a large number of birds singing before 5:45 a.m. Many

of them sound like thrushes.

NOTE: There seems to have been a big landslide right where I saw the *Thlypopsis* most frequently during my last visit.

5:52. Getting light enough to see a little

This whole area (unlike the area above Jarua where I worked yesterday afternoon) looks somewhat drier than during my last visit.

5:54. Hear what maybe Bruu song. Without R component.

Area of thick but rather dry looking scrub.

6:04. See a single Thrush alone. Apparently same species as yesterday.

"Dawn Chorus" almost stopped 6:08 a.m.

Very dull 6:20 a.m.

6:27. See a single C alone.

See a single House Wren alone.

Few or no tubular pink or red flowers around now.

6:35. See single *Thlypopsis* alone. In low dense bamboo thicket.

Uttering occasional "Tut" Note. Picks up long leaf or blade of grass. Apparently new. ?! ?! Apparently same species seen in this region before (~~XXXXIII~~) but looked almost clear gray above, almost whitish lower breast and abdomen.

See the same bird or another individual same species nearby area only a few minutes later. Now see that it is slightly brownish below (definitely ~~XXXXIII~~).

6:50. Again see *Thlypopsis* same area. Again alone.

Incidentally, this *Thlypopsis* is only about 50 yards from where the

C was seen earlier.

7:12. See a single Orange-bellied Saltator alone.

Bum

7:30. See a single Bum. Alone. Feeding on insects from leaves small bushes low dry scrub. (This is not far from where the *Thlypopsis* was seen earlier — on the opposite side, of the *Thlypopsis*, from the CC.)

7:46. See another single through. Alone. Definitely same species seen yesterday above Jaruma

8:04. See a single House Wren and a single Andean Sparrow in same bush. Apparently ignoring one another.

Bum

8:07. See a single Bum (not same individual as before) Feeding on pink trumpet shaped flowers which seem to be the same species favored by *diglossini* all over the Andes



This Bum is apparently alone, except for several hummingbirds

IV of different species within distance of 10-20 yards. Several *Patagona* *pyg* as. Also one blackish hummingbird with white thighs (probably planned) no IV on the hummingbird list. No obvious reaction between the Bum and any of the hummingbirds. But the Bum flies on almost immediately and then the IV hummingbird visits all the trumpet-shaped flowers where the Bum had fed and sticks its bill in the holes made by the Bum!!

8:14. See another House Wren alone.

CC See a pair of CC's alone. Feeding in low open scrub. Apparently getting insects. (These birds also looked very blue gray).

Bum A few minutes later see a single Bum about 20 yards from where the CC's had been (the CC's are no longer visible)

Some distance further on, see a single House Wren singing alone

8:37 See a single through alone. This seems to be same species as

(one of) the Quetzal species. Feisty. Coral bill & legs. Yellow-orange eye ring.
A little further on, see a pair of the "Light-capped" Thrushes. Also
see.

8:50. Further on, come across another single Brn. Apparently feeding insects on leaves small bush open scrub near small stream. For minutes on end, a single hummingbird hovers and darts all around the Brn. Repeatedly coming within 1-2 ft of the Brn. This hummingbird probably no. IV, but looks slightly different from previous IV seen. Call it IV A. (See description in list.) Most of the time the Brn ignores the hummer. But three times (at least) the Brn breaks off feeding to fly at the hummer and drive it a few feet away. Attacks are silent. Eventually the 2 birds separate.

Is hummingbird IV (and IV A) parasitic on Brn ???

8:57. See pair of Melospiza XXXIII feeding together in thick low scrub. Utter several long R's while moving about together. R's are loud, sometimes slightly fluctuating. Possibly higher and thinner than those of refi- cups in Bolivia.

NOTE: Both the Brn and the hummingbird involved in the Acute incident described immediately above were not the individuals involved in the Brn-hummer incident seen earlier this morning.

9:12 a.m. See single Melospiza XXXIII alone. Possibly one of pair seen earlier.

Then see single Brn alone.

Leaving 9:25

With the dubious exception of the Melospiza, everything here seems to be in complete non-reproductive mood!

NOTE: The area where I saw the last encounter between a Brn and a hummer was 8700 ft according to my altimeter (which may be a little

le high)

This afternoon going to walk up to A Peet area. Arrive bottom path 2:50 p.m.

See pair of Myioparus alone near highway.

Then see single "Light-capped" Thrush alone.

Then another, quite high (almost at upper path), 10,050 ft.

Reach lowest patch humid scrub just below A Peet area 3:48. It is now cloudy and very windy. No birds visible at moment.

Arrive main badly humed thicket 4:04 p.m.

See single Tui-belly alone. Sitting 20 ft up in tree, exposed, but silent.

Hear a few phrases of what sound like Brun song uphill. Swithering.

4:27. Everything very quiet - except for some Band-tailed Pigeons which may be courting.

4:31. See single Brun alone. Utters "Zueeuee zaza za" as it lands, after flying away from me.

4:35 p.m. Reach precise A Peet area. No sign of either A or B Peets. (There has been a little bit of humming & cutting around here.) According to my altimeter now, it is 10,700 ft.

See a single Tui-belly alone. And another (or the same bird again).

Then see a single Brun feeding off leaves.

Then hear burst of what may be Peet song downhill.

Everything very quiet 4:52 p.m.

5:00. See single Brun alone again. Probably same individual as before.

Then see another single Brun alone. In one of the areas where B Peet was seen last time.

Then hear burst of song which may be Peet in distance.

Brun
Peet?

Brun

fore
Brun

Peet

Then see single thrush alone. Apparently Quito species without eye-ring.
Then see another single thrush alone. Apparently Quito species with eye-ring!

Brown

5:17. See another Flycatcher alone

Then see another Brown alone. Again

Fog coming in 5:25 p.m.

See the same or another Flycatcher alone again. Again.

Now see a pair of Flycatchers together. No other species nearby. Again

Starting downhill 5:42, as fog is getting thicker

GENERAL COMMENT: It seems obvious that mixed flocks of finches, tanagers, honeycreepers, and warblers are absent here - just as in the Quito region.

There seems to be a positive correlation between non-gregariousness and paucity of species. I.E. when there are few species in a given area, there are few or no mixed flocks. Is this correlation direct or indirect. Are there no mixed flocks because there are few species? Or are there few species and no mixed flocks because of some other factor in the environment or because of the history of the area.

Offhand, one would expect the central part of the Andes to have more species than the periphery. The fact that this is not the case must, I think, be because the central species, and central populations of widespread species, are more efficient competitors (and have relatively wider ecological niches) than the peripheral populations and species. After all, the central populations and species presumably have had more time, on the average, to become efficient competitors.

One might suppose, to put it crudely, that the longer a fauna has remained in an essentially stable environment the fewer species it will

contain!

In any case, it seems likely that the different degrees of gregariousness exhibited by central and peripheral populations are due not only to the advantages of gregariousness to peripheral populations but also to the disadvantages of gregariousness to the extremely competitive central populations. Possibly central species do not exhibit intra-specific gregariousness simply in order to avoid stimulating inter-specific gregariousness.

One might suppose that when two related species come together — if one does not exterminate the other — first there will be strong selection to reduce competition between the two species and permit them to coexist together in relatively large numbers — but then one of the species will succeed in evolving some generally superior "progressive" adaptation and will replace the other eventually.

February 3, 1964
Below Palca

Going to work where I saw last Brown-hummer interactions yesterday morning. (I understand that this place is called "Valdivia").

Brown (late) 6:28 a.m. Overcast. Warm

See single Brown alone.

See single House Wren alone.

See a pair of "Light capped" Hummers alone.

6:41. Well! Well! Well! See a single Basileuterus-type.

Alone. Got a very good view of it, and should be able to identify it later.

Quite small (i.e. almost certainly Basileuterus, not Hemiprocne). Body olive

above, yellow-below. Head striped. Crown largely olive, black or blackish in front. Prominent yellow supercilium. Dark streak thru eye. The crown was much less black than that of the B. nigrocapitata near Quito (or that of the Peruvian nigrocapitata I saw in the museum in Lima), but apparently somewhat darker in front than the B. luteoviridis I saw in the museum. But I rather think that it must have been the latter. Probably not a juvenile because uttering lots of R's. R's rounded different from the one of nigrocapitata near Quito (and probably Ecuador). Thinner and weaker, uttered with varying speeds. This bird was in thin hedge of low scrub along edge cultivated field.

See single Brewer alone.

See single House Wren alone.

6:58. See same Bailethraupis again. In similar hedge. Still alone.

Crown in general looks same color as back. Still uttering relatively soft R's.

See a single Myiophobus XXXIII alone.

See another single House Wren.

IV 7:13 a.m. See what appears to be no. IV hummingbird or something similar. Feeding alone. This time I see that it has white spot behind eye. Presumably Metallura phoebe.

7:40. Have gone up ravine along small stream. Lots of nice scrub that looks as if it should be full of my birds but does, in fact, seem to be deserted. Why? Too wet.

Go on down stream again.

See single House Wren alone.

Then see single Hummingbird perched alone & quiet. Definitely IV or

IV A. Does not have white patch behind eye.

7:55. Starting to rain.

II or IVA
Brun

That what sounds like local Freckled song in distance up hill

II or IVA hummer flies off after another dark bird, which is, I think, a Brun. Then the presumed Brun disappears, and the hummer goes off to feed by itself. (There may be the same 2 birds involved in the hostile encounter yesterday.)

U

8:30. See a pair of CC's feeding alone. Utters twitters as "greeting".

See a pair of light capped Thrushes alone. Joined by a third. One of the pair immediately chases newcomer. I.E. this species is not at all gregarious now.

U

See same pair of CC's again a few minutes later. Still alone. Silent. Probing at leaves, apparently for insects.

U

Then see a single CC alone. Utters twitters as "landing call".

IV

8:45. See single II hummingbird. Perched alone. Get excellent view of it. See white plumes thigh, w/fees underside to tail. Obviously, now, that IV and IVA are the same thing. This bird had little or no white spot behind eye. The bill of this species is straight, moderate in length, and somewhat semi-shaped.

Brun

A few minutes later see single Brun feeding alone.

Leave 9:30. Rain getting stronger.

NOTE: According to my driver, the rainy season here should be from December to March. But this year it is "delayed" — i.e. there has been less rain than usual so far.

This afternoon going to work on lower slopes of Cutcaandio (starting out from high way at same place where one starts for Peet area. Arrive 3:35 p.m. Overcast, cold, windy.

Brun

3:47. See a single Brun chasing and swooping at a single brown bird. The latter is definitely not a hummer. How? When ????

See a single Orange-bellied Saltator alone. Again
See a single House Wren alone.

See a pair of Chrysobothris gaysi alone. In small trees hedge-like scrub.
(This sp. is never to be confused as near as "L. le-fuchs" as Saltator.)

Arrive to our point of the snow ravine where Pests occur higher up
4:23 p.m. 9125 ft according to my altimeter now-
Nothing at all visible.

See an occasional unidentifiable through fly by

4:26 See a single Brown alone. Again. Still alone. Silent. In very
low scattered scrubby grass.

There are another Brown alone. Again. Again.

See a single & alone. Silent. Same type of vegetation.

There is a single Brown fly right by & (only 2 ft apart). The 2 birds
ignore one another.

See another single Brown alone & silent. And another.

5:08. See a single House Wren alone.

Starting down hill 5:15 p.m.

See another single Brown. In grass with only a few tiny bushes scat-
tered at irregular intervals.

See a pair of Orange-bellied Saltators with some Andean Sparrows.

See a pair of Orange-bellied Saltators alone.

Leaving 5:55

February 4, 1967
Below Palen

Arrive base of path leading to Pest area 5:28 a.m. Raining quite hard.

Brown
Brown
Brown
Brown
Brown
Brown

Brown

2
rel. Going to wait for rain to let up a little (hope)

Rain continues to go on down to Veldene area (where I saw
the Ben. Antons yesterday and Brown - however not in same
area 5:40 Just barely starting to get light

5:45 Lots of thrushes etc.

Dawn chorus seems to be largely thrushes and other sparrows
at first. Then a few other things join in.

6:00. Something that sounds like irregular Brown calling.
"Whit chee whit chee whit chee." Also "chee-whit chee-
whit chee-whit" Thrush?

There are really lots of light-capped thrushes around. Single
birds and pairs. All alone. Not going to call them individually from
now on unless there is something special about them.

Rain thinning out to fine continuous drizzle 6:20 am

6:28. See single Brown alone

Everything nice, just 6:35

6:41. See single IV hummingbird alone

Then see pair of Melospiza XXXIII. Feeding together as seen
b, like CC's, i.e. apparently picking insects off leaves. Uttering lots of R's
as "greetings." Some (not all) of these R's are fluctuating or "rattle-
ing". Sound quite like weak or soft versions of some Firebelly song.
These R's may be what I thought were Firebelly songs in the distant
area, here, the other day. (I have never actually seen Firebellies in this
area this trip. Altho, of course, I have seen them frequently up hill.)

6:50 am. Aha! See a single Atlapetes. Obviously schistaceus.
cus. Presumably taizanowskii, although I did not notice black and white
on forehead (probably not surprising, as bird was some distance away)

and the rain continued. Singing alone exposed in small tree 2 ft above ground. SEE TODAY'S NOTES ON ATLAPETES

6:35. See single B. ... alone

7:00. See single A. schistaceus (obviously same individual) moving thru bush. Still alone. Q. very noisy, uttering "SN" and "CN".

7:20. See another single B. ...

7:55. See a single thrush. Sooty all over (Crownish-sooty). Coral bill, orange legs, yellow-orange eye-ring. Possibly just the "Gent" species (LVI A), but it looks larger. Really enormous in fact.

8:10. See another pair of Myiopsus XXXIII alone. Noisy. See another B. ... alone. Silent.

See a IV hummingbird sitting alone and silent.

8:27. See another pair Myiopsus XXXIII alone. Also noisy. Leaving 8:35.

Return to hotel in Jaruma. Also drizzling here.

While having second breakfast here (ca 9:00-9:15 am) see both a P. garyi and a Light capped Thrush carrying n.m. !!! The garyi apparently nest-building on or under roof of the hotel.

There last 2 incidents — plus the singing of A. schistaceus — would suggest that the breeding season may be beginning with a bang today. Can this be due to the rain? There has certainly been more rain this morning than on any other day of my visit this year (altho it has been raining at night from the beginning).

The fauna here is really quite surprisingly different from the Quito fauna. There may be almost as great a variety of species (of the humid temperate bush-warbler, bush-finch, tanager and honeycreeper group) here as in Quito, but only a few of the species are common.

(3)

Leaving aside the problems of the region, the following questions occur to me

Why are there no few Par. leucotis here ??? Because Myiozetetes are so common? (Myiozetetes are certainly very much more common here than near Quito.)

Why are there no few Atlapetes here? Competition with Saltator or? (Off hand, this does seem to be unlikely.) And why is the local Atlapetes schistaceus instead of rufinucha? I must check on the distribution of these 2 species. It is possible that they are distributed in successive fashion all along the Andes. Possibly it is largely due to chance alone which species has become more competitive in any given area.)

Why are there no big blue and yellow tanagers (Thraupis spp., Dubonia, Dideromys, Butor, etc.) here, and why are Guiraca relatively more and (apparently) narrowly distributed here? Competition with Orange-bellied Saltators and P. garyi ???

Why are there no Myiozetetes here? Are tyrannid flycatchers more common here than near Quito? (My observations would suggest that this may be so.)

Going to work above Chama this afternoon. Areas where there were lots of Buccones and CC's during my last visit. Arrive 2:40 pm. Overcast. Windy. Cold. Nothing much visible at first.

2:58 pm. See pair of Light capped Thrushes alone.

3:05. Lots of loud thunder, not too far away. Then, a few minutes later, a few light sprinkles of rain.

See several single Light capped Thrushes alone. Going to stop counting them.

(U) 3:17. Three CC's flying. Apparently hostile chase. Lots of twittering.

Another species coming
seen 20 ft from shore
seen 20 ft from shore 3:30 pm
Then 10 ft from shore 3:30
seen single Xanthocephalus alone

U See another in trees near village 3:40 pm alone (altho there are a
lot of finches, including P. frontalis and Black-headed Goldfinches [Magellanicus
us?]) passing in and out of the same trees).

4:23 pm See a single Orange-bellied Saltator alone Hopping along
ground 10 ft from shore. It is 10 ft from shore (covered bare ground and small
plants) along shore. It is 10 ft from shore. It is 10 ft from shore. It is 10 ft from shore.
competition for local finches after all.

Brown U 4:45 pm See a single Brown alone and silent in hedge by village.

4:52. A single C. flersbyi alone. Uttering "Secret" Notes.

Then see another single Orange-bellied Saltator alone. In hedge.

5:10. See another single Brown alone in hedge.

U Then see pair of C's feeding alone in hedge. The 2 individuals are not
very close together, about 5 ft apart. Utter a lot of "Secret" Notes. Also 1 twitter,
and 1 burst of triplet song! Then fly off to another hedge. Land about 10 ft apart.
One of them utters triplet song as "landing call"!!!

Leaving 5:35 pm. Still raining a little.

It is really very remarkable that there are no Couacou here.
It looks absolutely ideal for them.

Incidentally, it should be noted that P. gayi also seem to be ab-
sent from this area. So the absence of Couacou here cannot be due to
competition with gayi.

June 2, 1964
Below 8000

As to going up to 10,000 ft. - the way. Arrive base of road 5:00 a.m. Hot sun (yet) but there seem to be a lot of low clouds about.

Lost my pencils on the climb - so the following is just how Arrive first patch burned scrub just below A.P. at 5:55. SEE TODAY'S NOTES ON MIXED DILOECINI.

The results of today's observations on mixed flocks can be summarized as follows:

No Whitestarts were seen. They really do seem to be quite absent from this area.

Thlypopsis also seem to be absent at these altitudes. Ditto Basilentemus. Why?

There are lots of flycatchers and furnariids around here, but they do not seem to associate in or with flocks.

I heard something utter double whistles this morning. These sounded similar to, but not identical with, the "song" of Dulcinea near Guatemala.

I also heard various sounds which were reminiscent of Urosalpinx us; but they were, I think, uttered by (a) different species.

Pect
Ag
Br I saw a single Pect alone at least 6 times, a single Ag alone once (and I am sure that it was essentially alone all morning), and single and pairs of Brues alone many times (at least 10 or 12 times).

I saw a single Arremonops alone once. I cannot be certain that there is more than one pair of Arremonops in this area; but I think that there are at least 2 pairs. In any case, it is obvious that Arremonops

us are comparatively rare here.

I saw 3 A. s. taczanowskii alone. Two birds moving about very close together, and a third accompanying them but keeping slightly further away. Quite alone. Uttering lots of "Trit" notes (see today's NOTES ON ATLAPETES). Also began to hop around quite excitedly when they got near to us. Almost a mobbing reaction. Nevertheless no other bird(s) joined them.

I heard quite a lot of Atlapetes s. taczanowskii songs and PN's (without being able to see the performing birds) earlier in the morning when I first arrived in the area. I am now convinced that there are really quite a lot of these birds in this area, at high altitude, if not at lower altitudes.

After 4.30 a.m., the whole area was drenched in fog and light rain. Nevertheless, there were still no signs of mixed flocks. I think that I can be sure that mixed flocks are really absent in this area. Possibly, as near Quito, the birds of different species are positively avoiding one another.

Brown I saw one case of inter-specific aggression this morning. A Fire-belly attacked and chased a smaller bird (probably a Brn). Fire-bellies of the central Andean area do seem to be very aggressive!

Going to work at base of road to Peet area this afternoon. Arrive 3:40. Cloudy but no rain (yet). (Note: this is the area where I saw so many Orange-bellied Saltators during my last visit.)

3:55. See a single P. garyi alone. In dense scrub 5-10 ft high. Not in fields.

W Pair of A. s. flyc. uttering "Secret"s. Then land in bush. One utters twitter as "greeting" or landing call. Then both fed. Apparently in or on clusters

18
of small purple flowers

Brown

Pair of Brown Peegies. Along sand together. One uttering a "greeting" or "landing" note. The other far off. Other are on the ground for a few seconds.

Brown

A few minutes later on sand. A pair of Brown Peegies. Apparently feeding on the sand. One uttering a "greeting" or "landing" note. The other far off. Other are on the ground for a few seconds.

4:28. The night Eagle will leave.

Leave 4:15 p.m.

Palau Area 1964 (Lettich, Hughes & Low)

Herps

Feb. 2 3 hrs 30 min

2 hrs 15 min

Feb. 3 2 hrs 20 min

2 hrs 15 min

Feb. 4 2 hrs 45 min

Feb. 5 3 hrs 15 min

17 hrs 30 min

No Shrike
on Salt
marsh

Palca Area 1964 (North Leg & Cove)

Feb. 2, 3, 4, 5

No Inds Seen Alone

No Inds in Flocks

|||||
|||||

No Spp. in Flock

No Flocks Seen

No Highly Organized Flocks Seen

Largest No. Inds One Flock

Largest No. Spp. in One Flock

May 21, 1966
Carpach Pass

Over the just below top of pass, 8850 ft, 5:53 a.m. Clear
Cool. Just beginning to get light

NOTE. This is good AS-USTF vegetation !!!

Hear bird song 5:57 a.m. Possibly by a species of one of
my groups, but I don't recognize it. Several inds. singing

Otherwise not much in the way of bird sounds

6:04. Hear a few Whistlers song. NODWAH. Then hear
several more Whistlers in distance. NODWAH.

Occasional patches of fog in neighborhood

Whistler song continues. Completely overlapping some
noisy R's. (R's presumably by flycatchers, not Albes)

6:10. Rather strong wind coming up.

Quite a lot of miscellaneous "CN"s in neighborhood.
But it would appear that most species are not in full breeding condi-
tion

6:20. Now there is a greater variety of bird song and oth-
er noises. But the "downy choruses" is far from continuous.

6:27. Hear more Whistler song. At first, NODWAH.
Then overlaps at random with Atlapetes "Greetings". Then both
species shut up.

A few seconds later, see pair PL Atlapetes moving thru
mixed bamboo scrub. 1-4 ft up. Quiet. Definitely alone

Then hear what may be Bruin song in distance. NODWAH

Shuts up. Then Whitestarts begin again. NODWAH shut up

6:34. Fog getting thicker and thicker. Very difficult to see anything now. This fog does not appear to be stimulating the formation of mixed flocks.

6:45. Birds noticeably quieter now.

NOTE: There are a lot of birds around here which sound like Chlorospingus, but I have not been able to identify them yet.

Caught glimpse 2 or 3 birds flitting about very actively. Both low in scrub and moderately high in trees. Apparently "Luteovirens dis-types". But very noisy. Uttering lots of song, phrases. And these are very distinctive. I do now long repeated "N" but not song, with lots of added components, including R's !!! General effect is not very Parulenteros like! Could this be He misingus frontalis ??? Could they be the birds heard uttering Chlorospingus-like sounds earlier? More important, could they also be the birds heard uttering presumed Whitestart Song earlier ??? Birds apparently alone.

Fog lifts completely 7:10 a.m.

7:13. Walking down road. I hear some more songs which do sound more typically Whitestart-like. I only wish that I could see the damn things! NODWAH. Shut up.

Then see single "Luteovirens-type". Definitely alone. 6-8 ft up small trees. (Now) uttering "Alen"s. Yellow superciliosus is very broad and bright. And bill does look comparatively long and heavy. So I am now fairly certain that this species is

H. frontalis !!!

Also 17.24 See single H. frontalis. Apparently same sp. seen near in Bolina and El Estero. Silent 2-3 ft up in small trees. Definitely alone.

Seen beginning to reach this area 4:28

little

Then see large mixed flock. Includes at least 2^W Whites tarts (definite - the yellow-speckled species), 2 fitties, 1 Yello belly (!), 1 GT (!), 1 or 2 undescribed "North American warble r-types", 1 Ruddy Flycatcher, 2 P. citreus, 1 small brown wren, 1 olive woodpecker (possibly TVT), 1 flycatcher TX, 3 TX's, and 1 small dark hummingbird. Possibly others. All birds moving 2-10 ft up thru scrub edge road. The wren, hummingbird, and P. citreus may have been "casual" associates. Rest of group certainly highly organized. Most birds uttering lots of "CN"s. Whitestart flocks sing. NODWRH. Difficult to tell who, if anyone was in lead. Certainly not Whitestarts or fitties. Probably TX or TX's most of time.

It would appear that such flocks as may occur here are characteristic of good weather rather than fog!

Walking up road a few minutes later, come across what seems to be tail end of same flock. Now definitely being followed by a single All-rufous Synallaxis. All rufous definitely buzzing up rear. Silent. Ranging 1-3 ft up in mixed bamboo scrub.

8:18 am Back up road, Area where presumed H. frontalis seen and heard earlier this morning. Two^W birds of this species are flitting thru mixed bamboo scrub here near Olmouco.

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disputing. Very vocal. Also performing ritualized wing-fluttering. Very close to these birds are 2 All-rufous flycatchers and 1 flycatcher which looks like Thomomys but has some brownish on back. This must be considered a mixed flock but probably not a highly organized one.

8:35. Everything dead & quiet now

8:50. See small, quiet, diffuse mixed flock in summit bamboo scrub edge rock slide. Includes at least 1 Th. cyanocephala, 2 Yellowbellies, 2 or 3 small flycatcher-warbler type birds of 1 or 2 other species. Group seems to disperse almost immediately.

Go on to absolute top of pass (8875 ft according to my altimeter now) 9:08 a.m.

NOTE: The hills around here go only 100-200 ft higher. Covered with forest and scrub to the very top. Or have only tiny patches of "scrub jungle" on top.

SEE ALSO TODAY'S NOTES ON MIXED DISLOSSINI.

COMMENTS: This area obviously very humid on the whole. There have been lots of tree ferns, also fair amount of epiphytes, at all the sites where I have worked this morning. (Also, looking over pass, to NE, can see some "white" Cecropias.)

Cloud coming up 10:20 a.m. This is followed, almost immediately, by a moderate recrudescence of bird sounds.

Hear more presumed H. superciliosus sounds in usual area.

10:30. Back where diffuse flock seen earlier. Pair of Whitestarts flitting about in bamboo scrub and second growth trees 4-15 ft up. Then I see that they are part of a very large mixed flock.

ck. Group also includes: 1 bird which looks like a gray-capped vireo with wing bars, 1 "sensation" TXI, 2 Ruddy Flycatchers, 2 "Thomyias-like" flycatchers TXII, 2 C's, 1 Sitti, 1 Yellow-billed, 1 Plush-capped Finch (!), 1 GT, 1 Delothraupis (!), 2 H. atropileus, 2 Chlorospingus types, 3 TX's, 2 hummingbirds of different species (one probably Green + White).

A single Sitti appears with group for a few seconds, then disappears.

All birds quiet, but utter lots of soft 'CN's.

Group as a whole moves thru a great variety of vegetation. H. atropileus and Plush-capped Finch stick pretty much to unweaved bamboo scrub, 1-4 ft up. GT and Delothraupis stay low, 1-4 ft up, in greater variety of scrub. All or almost all other species ranging 3-20 ft up. TX's probably more frequently high than any other species.

Whitertarts in lead part of time. Then TX's in lead.

Group as a whole very diffuse but undoubtedly highly organized. Almost certainly also partly the same as first large group seen earlier this morning.

Sitti f —————> C's twice. Presumed Vireo f —————> Whitertart once. GT f —————> TX once. Ruddy Flycatcher attacks —————> Whitertart!

Group as a whole gradually drifts down hill. Lost to view.

Leaving 11:25 a.m.

NOTE: The "Chlorospingus-types" in the last flock pro

likely were canigularis or some closely related form. Gray heads
 White throats. Boundary between gray and white gradual.
 Underparts yellow. Upper parts yellow-olive. Wings and
 tail darker. I.E. these birds looked very much like Enemesopus.
But they definitely had completely dark (not red) bills!!!

GENERAL COMMENTS:

Today's observations were rather a surprise to me!

The proportion of birds involved in mixed flocks here is
remarkably high. Probably quite as high as in any other part
 of the Andes — even the Western Cordillera of Colombia. (Probably
 the observational conditions — or my methods of observation —
 tended to exaggerate the percentage of birds in mixed flocks.
 Possibly I overlooked many birds not in mixed flocks, or possibly
 the birds not in mixed flocks tended to remain hidden. But,
 certainly, it would be impossible to explain all the surprising
 features of today's observations by ascribing them to "artifacts" of
 this type.)

At the same time, the number of flocks seen was not
 comparatively high. Many more flocks would have been seen in
 similar environments in Colombia!

To sum up, the birds here seem to be similar to those
 of the Quito region insofar as some are gregarious while others are
 not. But the gregarious birds here seem to be more strongly greg-
arious than the comparable birds of the Quito region.

Possibly, it may still be convenient to recognize 2 extr-
eme types of social behavior in this "Andean Tanager Association".

A. Strong inter-specific gregariousness throughout a whole region. As in the Western and Central Cordilleras of Colombia.

B. No inter-specific gregariousness. As in large parts of Central Ecuador and Central Peru.

But it may be convenient to recognize two different types of "intermediate" behavior. A. Moderate to weak interspecific gregariousness throughout a whole region. As in the Sierra de Merida and the Eastern Cordillera of Colombia. B. Strong inter-specific gregariousness confined to strictly limited areas. As on the road to Santo Domingo in Central Ecuador. And the area(s) visited today.

The fact that the interspecific gregariousness observed today was "stronger" than any observed in Central Ecuador may be correlated with the fact that the "humid temperate zone" is narrower here than in Central Ecuador. Or perhaps the birds of this area are "tending toward" the extreme gregariousness of their relatives in Bolivia ???

(Probably, some of the gregariousness of the birds observed today may be correlated with the fact that they are very near a major "geographical" frontier ??? They are only a few miles from the Huallaga River valley. Thus, their position is not unlike that of the birds around Chachapoyas.)

NOTE: Even though a number of brightly colored tanagers were seen here today, they were still less common than in many other regions of the Andes. (This is all the more significant as the areas visited today were not of very high altitude.) Thus, tod

ay's observations do not necessarily conflict with my earlier conclusion that species are more segregated here than in many other regions.

NOTE: It must be significant that 82 *Atlapetes* (and the presumed *H. frontalis*) definitely were not associated with the flock seen this morning. Possibly also significant that *Thargomus* apparently was not associated. (I might add, in this connection, that all other dendrocolaptids appeared to be rare or absent here.) Thus, some species appear to be non-gregarious here — in spite of the fact that there are flocks here, and that the same species are gregarious elsewhere !!!!!!

NOTE: One point might be stressed. Altho, in the Central Andes, mixed flocks may be confined to frontiers with the Upper Sub-Tropical Zone, they not only occur along other types of frontiers in Venezuela, Colombia, and Bolivia!

May 22, 1966
Cayush Pass.

Going to work slightly different area this morning. Just past vent of pass, on eastern slope. Arrive 5:30 a.m. Still quite dark. NOTE: This area must be slightly lower than the area worked yesterday, but it registers as 9000 ft on my altimeter now!

Walk down road to 8925 ft, approximately. There seems to be more bamboo and other second growth here than in the area we

heard yesterday. But also quite a lot of VSTF type trees

First miscellaneous bird sounds heard ca 5:50 a.m. Start
ing to get light now. First DC 5:55. *H. atripennis*? Also some
other, more elaborate, song phrases. Possibly Whitestarts. NOD
WAH. Also some thrush sounds (not song). DC stops

6:01. Now there is lots of the presumed Whitestart song.
By several inds. Overlapping one another, but all NODWAH. White
starts shut up. DC starts again. Stops. Presumed Whitestarts begin
again. Then DC starts again. Complete overlap.

6:11. See a pair of PL *Atlapetes* on ground and low in scrub on
old bamboo. Silent. Definitely alone.

Fog starting to come in 6:17 a.m. General volume of bird
sound is decreasing.

6:32. Walking back up road. See single Yellow-belly alone
ca 10 ft up in isolated VSTF tree.

6:36. See definite mixed flock. Includes 2 ^{vv} PL *Atlapetes*,
1 blue & yellow tanager (possibly *Butorampus eximia*!) All 3 birds
moving 3-6 ft up region mixed bamboo scrub. PL's utter lots
of "PN"s. PL's f —————> tanager repeatedly!

6:53. Quite a lot more presumed Whitestart song. All NOD
WAH.

6:59. See a pair of PL *Atlapetes* 3-6 ft up in scrub. Certainly
same pair seen with flock earlier. But apparently alone now.

7:03. A single blue & chestnut bird (*Delottrampus* ???) flies
across road. Silent. Definitely alone.

Fog has reached this area now.

14. 16. 50. Region mixed bamboo scrub just below 7000 ft. for mixed flock. Includes at least 2 Hemiprocne or Benlaurina types (almost certainly H. frontalis), 2 maniscript flycatchers, 4 forest tanagers (almost certainly Plinthis-cappell). All birds 2-4 ft up. Agreornis-type (possibly some species as on Hemiprocne) group. Group not highly organized. All birds scatter.

NOTE. I am now almost certain that all the Whitestart-like songs heard this morning were really uttered by the H. frontalis types.

7:40. Walking down road. To 8800 ft. There really appears to be remarkably few birds here! In spite of the fact that the vegetation mixed scrub and VSTF, looks quite "primary". Everything very quiet.

A few minutes later, at 8445 ft, see single Pict in scrub 2-4 ft up. Silent. Now definitely alone. But probably has just left a mixed flock 40 ft away.

This flock includes at least 1 Whitestart, 2 H. atropurpurea, 1 Sitta, and 1 dull grayish Diglossa - streaked underneath - i.e. almost certainly q. Bari!

H. atropurpurea in bamboo scrub, 1-3 ft up. Whitestart and Sitta in mixed scrub 3-6 ft up. Whitestart (or nearby Pict) sings. NODWAH. Other birds silent. Flock disappears without my being able to tell who, if anyone, is leading.

A few minutes later, see Whitestart and Pict only 2 ft apart (again?) Both silent. Pict flies off. Whitestart does not follow.

From
Dyer

NOTE This is a remarkable place to find Bari! Possibly Bari
incl. tend to "stray" more than incl. of other Diglossa species. This
would explain why Bari needs Central America

Back

A few minutes later, hear more Whitestart or, more probably,
Pact song. NODWNH. Starts up

NOTE: So far this morning, almost all flocks seen have been
in sunny areas. Areas still in shade seem almost deserted.

8:13 am Ca 8400 ft See single Blue & Orange Tanager (the
distinctive local subspecies - identification definite). 20 ft up in VST
F tree. Silent And definitely alone.

Black &
White

CORRECTION: A few seconds later, I see that this Blue & Or
ange is part of a large mixed flock. Group also includes 2[✓] Yellow bell
ies, 2[✓] *H. atropileus*, 2 ~~TX~~ (Pseudospingus-type), 2 small tree
creepers (possibly *Mangacornis*), 3 or 4 other small warbler-
like birds (probably 2-3 species). Group as a whole diffuse. But
the Blue & Orange and the Yellow bellies show a definite tendency
to stick together. In spite of the differences of the group, all the
birds drift in same direction. I.E. group is highly organized.
But leadership changing. All birds quiet. Most birds ranging
10-20 ft up in mixed scrub - VSTF. ~~TX~~'s and tree creepers seen
only in trees. *H. atropileus* ranging 10-15 ft up.

8:54 am. Walking back up road. See a pair of Yellowbellies
flying. Uttering "PN"s. Alone.

9:03. Further on. See pair ^W Vireo-like birds. 10 ft up second
growth trees. Possibly same species seen with flock yesterday. But this
pair definitely alone now.

Everything dead now. 9:18 a.m.

9:34. Near car (7000 ft). See p. 17. Whitethroats. Flycatchers in
trees edge pasture. Alone.

Fog starting to come in again 10:13 a.m. This does not prove to be
a new outbreak of bird noises.

Leaving 10:40 a.m.

COMMENTS:

My observations here are the "fumbling blow" to the theory
that mixed flocks are positively correlated with density of population.
The population of my species (considering the groups as a whole) are
comparatively small, but inter-specific gregariousness is compara-
tively highly developed!

I did not see as large flocks today as yesterday. But I
did see a larger number of flocks today. This is significant because
the vegetation of the area worked today was much less nearly "ver-
gün" than that of the area worked yesterday.

On the way home, I tried to survey the areas surrounding
this Campul Pass. Of course, cultivation is spreading in all direc-
tions. But it does seem likely that the Campul Pass areas where I have
worked are nearer to the original boundaries of the Upper Sub-
tropical Zone than to the original boundaries of any other zone.
(Huanuco itself is in a very arid area, but it is 2 hrs drive from
Campul.)

It is possible, in fact, that the original Humid Tempera-
te Zone of the Campul Area was surrounded by Humid Upper Sub-
Tropical Forest on all sides! I.E. there may have been a narrower

"fringe" of J-TF 0. between the lowland temperate forest and the nearest dry area

May 23, 1966
Panama

We came out to this area in the hope of finding montane forest. Without success. Finally arrived at "La Molino", a "brent-raining station" 7400 ft. Dry Cultivated. Some scrub along stream.
6:10 a.m. Clear. Moderately cool.

6:18. A pair of Yellow Grosbeaks flies by. Silent & alone.

6:40. See single *Thlypopsis* (presumably usual species) in hedge by corn field. Silent. There also are Andean Sparrows in same hedge. But the 2 species seem to be ignoring one another. Then the *Thlypopsis* flies off. Nothing follows.

SEE TODAY'S NOTES ON MIXED DIGLOSSINI

NOTES: I saw several single thrushes (apparently sooty) and Orange-billed Saltators, alone, at both the first and second sites visited today.

There were absolutely no traces of any mixed flocks (of species of my groups) at any sites.

May 24, 1966
Carpenter Pass

Arrive area 8425 ft., Huancabamba side of Pass, 5:25 a.m. Still dark

Cloudy. There was occasional rain on trip out.

Rain starts again about ... exactly. Quite loud.

Mus. Various bird sounds have begun by 6:00 a.m.

But it is still too dark to see, and rain is getting heavier!

Vegetation here is rather lush but mixed. USIF and second growth.

Most of the bird sounds ca 6:15 are *Andean Sparrows*, as (there is a small pasture and a few shrubs not far away) and various species which I do not recognize. I can catch a few and get glimpses of a few birds moving very low through scrub, but most are quite invisible.

Going to walk along road ca 6:30 a.m.

Hear lots of Whitestart-like songs. All 1:25 a.m. Then then stop. Hear one long phrase which may be by Sect. *Coccy*, slightly up hill! Stops. Then Whitestart-like songs start again.

Mutual song inhibition (still) seems to be operating perfectly!

6:44. See pair of Whitestarts. Silent. Flying among 2-6 ft up in second growth scrub. Apparently alone.

Rain is decreasing now. Bird sounds increasing.

6:53. Walking up along side path, can hear lots of R's. Either flycatchers and/or Barns.

7:04 a.m. 8550 ft. Region very mixed second growth. Large across definite mixed flock. Includes 2 presumed *H. frontalis*, 3 or more *Synallaxis*. (Latter look rather like *All-nipens* but are definitely different species. Grayer toward rear below. And have trace of under tract light supercilious stripe.) All birds ranging 3-6 ft up. All very

Just
down
Hills 9
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Hills 3

close by the hill. Presumed H. frontalis uttering Whitestart
like song. In bamboo not near other Atropileus group! In fact. Moving from ground to 2 ft up. Then back down
to 1 ft high current of birds, group. It up. Then
group moves off. Can't see where heading.

7:20 8000 ft See pair of birds 10-15 ft up second growth
tree near small tree. Other birds 5-10 ft up. One back and
d. wings. Dark head. Belong. Apparently alone.

A few minutes later, some distance away, see definite mixed
flock in second growth woods. Includes at least 2 Yellowbellies, 1
Synalaxis, 1 Atropileus, and 2 or 3 birds which are either presumed
H. frontalis and/or A. nigrocinctus. Moderately noisy. Flock
very dispersed. Possibly not highly organized. Yellowbellies 10-
12 ft up in trees. Other birds 5-10 ft up trees & scrub.

While this flock is around, I hear what sounds like a
song of northern type. But I can't see the bird uttering it.

NOTE: This atropileus was not in bamboo (altho there
is some bamboo several hundred yards away. I.E. it probably
followed the other species out of its "usual" habitat.

7:40 Rain almost or completely stopped. But fog is starti
ng to come in from top of mountain.

Catch brief glimpse white Whitestart in valley downhill.
Apparently alone. Sing. NOO WAAH.

7:50 8000 ft See a pair of thrushes flying alone.

7:53 See group 2 or 3 furnarids 2 ft up second growth
scrub. Presumably species of Cranolaima. Whole front of face as well as

Also: My warblers

Flocks 11
2 spp

crown white. Apparently alone.

8:03 a.m. 8410 ft. Come across diffuse flock. 1 or 2 Agelaius besides, 1 Myadestes in tree. 2 or 3 Thryothorus and/or Psaltriparus as types in scrub. Probably essentially the same as one of the groups seen earlier.

8:15. Everything very quiet now.

NOTE. General aspect of vegetation in this area is very reminiscent of Agua Bonita below Pico.

Starting downhill again 8:25 a.m.

Some yards down path, see a pair of what look like the yellow-bellied Caciques of Panama! Alone. 2 ft up very dense scrub.

8660 ft 8:40 a.m. See a single sooty Thrush (identification definite). Silent & alone. 12 ft up second growth tree.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

8:54. 8540 ft. See single large dendrocolaptes 10 ft up in second growth tree. Probably same OTT seen below San Juan. Silent. Definitely alone.

Then this bird flies down hill. Joins very diffuse, scattered group in second growth woods edge pasture. Group also includes 1 Cy (definite!), 1 M. cyanocephala, 1 TX (Pseudospingus type), and at least 2 or 3 others.

Then I see 4 Big Bullfinches (definite) 10-30 ft up in trees, several hundred yards away. Definitely alone (moving in opposite direction from flock).

9:25 a.m. 8445 ft. Come across (another) very diffuse flock. Includes at least 4 or 5 Synallaxis types (species with faint sup

Flocks 12
6 spp

Flocks 13
9 spp

Flocks 13
6 spp

exclusively in scrub. 1 *Cyanocephalus* and 1 *Myiarchus cinerascens* all in trees. 1 *Scot. Flycatcher* group. 1 *Pet. Flycatcher* out of bush when *Synallaxis* flies in. Probably there are still other species in scrub.

This group probably is combination of 2 groups seen earlier. *Synallaxis* are noisy. Other species quiet. *Synallaxis* apparently in lead!

9:33. Almost down to road again. See single ♂ *Atlapetes* is. silent. 3 ft up scrub edge stream. Apparently alone.

.. The ♂'s here really are remarkably non-gregarious!

COMMENT. The fact that such a high proportion of the birds here occur in mixed flocks is largely due to the absence of other species! (SE species of denser and/or more open habitats, e.g. *A. superciliosa*, *B. macrocratus*, *Tumbell*, *carbonaria*, s.l., which are of variable gregariousness in other parts of the Andes.) In this respect, this area differs from the area below San Juan in Central Ecuador (where the variable species were present and partly gregarious).

7:54. Down by road, see single White-tart in tangle edge ravine. Silent. Definitely alone.

10:02. See a pair of *C. XIV* feeding in second growth trees 6-20 ft up. Silent. Definitely alone. I am sure that these are the birds I saw with the large mixed flock on May 21 and which I confused with *CC's*!

10:32. A little further up road. See single Ruddy Flycatcher. Uttering R's. Flycatching 2-6 ft up very poor second growth scrub.

Definitely alone

10:46 am Walking back down road see pair of *M. thomasi* but only 6-12 ft up in scrub. Quiet. Definitely alone

A few minutes later, see a very diffuse but probably highly mixed flock moving thru trees, 15-20 ft up, on both sides road. Group includes 2 Yellowbellies, 1 *M. cyanocephala*, 2 *M. thomasi* (probably all same species), 1 or 2 of the usual grey capped vireos, 1 of the manakin-like birds. All birds quiet. The flock apparently changing. *cyanocephala* 1 ————— Yellowbelly Yellowbelly 1 —————
————— *cyanocephala*

10:59. See single *Agriornis* (manakin-like species) alone

Leaving 11:02 am

Just as I go, see another single *Pet. ruber* and alone

COMMENTS:

The area worked today was just at the edge of cultivated areas (small farms, pastures, a few small and not-very-successful cooling Eucalyptus plantations). I.E. as near to the arid temperate zone as it is possible to get, without abandoning natural vegetation completely. Thus, the mixed flocks seen today were particularly significant. I saw relatively more single birds and pairs alone today than on previous days in other parts of this area; but mixed flocks unusually were at least moderately common today. This is conclusive!!!

Incidentally, I made another check of the vegetation surrounding this area on my way home today. Observations of the few "natural" trees and scrub-patches left between Carpish and the

March 14 1964

Post

nearest town. Ayacucho, would appear to confirm the suggestion that this whole Carpath area was once completely surrounded by USTF.

If I had made observations only near Carpath, I would think that mixed flocks were positively correlated with density and extent (height) of vegetation — nothing else. But this probably would not explain variations in mixed flock frequency in other areas. I think that I must involve "frontier concepts" in order to explain the situation in such regions as Central Ecuador.

In this connection, I must try to distinguish between two different types of "rates": ① Frontier with Humid Upper Subtropical Zone vs total area of region inhabited. ② Total extent of all frontiers vs total area of region inhabited. Is it possible to distinguish between these two? If so, is the distinction important?

(Probably yes! For instance, both the Western Cordillera of Colombia and this Carpath area may have much highly developed floras simply because almost all their frontiers are with the Humid Subtropical Zone. I.E. they do not touch much Páramo or Puna, or And Temperate or And Sub-tropical Zones.)

One peculiar feature of this whole Andean problem should be stressed. In the North (and probably the South) it is the total effect of frontiers on whole regions which seems to be important. In the Center, by contrast, it seems to be the effect of frontiers of particular areas on these particular areas which is most important.

NOTE: According to the local people, the seasons here are

almost the exact reverse of those in Panama. Rainy season begins in December. Lasts about 3 (4) months. Rest of the year dry.

May 25, 1966
Carpenter Pass

Going to work on Huamancillo side of pass again. Another morning. Higher than the one worked yesterday. 8800 ft according to my altimeter now. Arrive 5:45 am. Starting to get light. Clear. Fog already present at slightly higher elevations.

A few miscellaneous bird sounds (mostly thrush) at 5:53

Vegetation here somewhat mixed. Lots of dense scrub and low forest. Some obviously second growth. Some apparently AS.

First Pect or Whistler-like song 6:00 am

6:02. Now I am almost certain that the bird uttering these songs is Pect. Songs quite typical in form. Except that they are divided into somewhat shorter phrases than most songs uttered later in the day. However, the bird is uttering phrase after phrase at very short intervals. All song NODWAH.

Then we pair PL attempts soft away. 2 ft up in AS. Definitely alone. Utters "Greetings". Completely overlapped by presumed Pect song. Then PL's utter 1 or 2 Whistle songs. Also completely overlapped by presumed Pect. PL's move away.

Presumed Pect continues as before. Then there is a sudden outburst of loud R's and more formless twitters, mingled with song from same area. And then I see that there is a pair of presumed H. frontalis.

is in this area!!! Apparently alone!!! Ranging 2-6 ft up. And then I see that the presumed Pet Song separately is being uttered by one of these presumed H. frontalis.

Pet Song I really don't see how White-tailed Petrels and the presumed H. frontalis keep themselves sorted out in this region! Is it by singing at different periods of the day?

6.30. There seem to be a lot of presumed H. frontalis singing in this general area now. But everything else is rather quiet.

6.32. See a single Yellowbelly Quet. 3 ft up in AS. Apparently alone.

6.34. Slightly down road. Hear what may be Alapetes torquatus song down in ravine NODWAH. Shuts up. Then there is another burst of presumed frontalis song. Also NODWAH.

6.48. Walking back up road. See another single presumed frontalis 1 ft up second growth scrub. Definitely alone. Uttering "al CN"s. Hees off.

Things becoming quieter now, 6:52.

Walking up road, see another pair presumed frontalis alone. This certainly is one of the least gregarious species in my groups!

Well! Well! Well! 7:00 am Reach 8845 ft. Bottom limit of my worked May 21. See mixed flock uphill. Includes at least two Yellowbellies and two Margarornis. Flying from tree to tree in AS. Obviously highly organized. Margarornis f —————> Yellowbelly is repeatedly!

At same time, another, much larger, mixed flock appears, moving along road, slightly downhill. Includes at least 3 EXs

March 15 11:00 am 6:51 pm

Black 16
18 mls
17 app

① also, Whitestart
and PL (111)

(the Pseudopungius - types), 1 Blue & Orange Changer, 8 Spiz
1 Audubon (definite), 1 H. alpestris 2 primula H. p.
(inc 1), 3 All. rufus Synallaxis with light eye-rings (EXVII)
1 C. alpestris (EXIV), 1 of the grey capped Sora type, and one
of the "manabius" (uncal. species) Birds are very thin some show
second growth scrub and small trees. Synallaxis and presumed Pro
tates tending to stay low, 2-4 ft up. Most others ranging from
5-20 ft up.

Group obviously highly organized. All birds down together.
At first EX's are in lead. Yellowbills f. ———→ EX's. Then the
Blue & Orange groups into lead. Yellowbills f. ———→ Blue & Orange.
ge. Dulcinea and Whitestart usually at rear.

Conversations

Group as a whole noisy. Some Whitestart and/or presumed
frontates song.

There certainly were no Conversations with group.

NOTE: I am fairly certain that the presumed "All. rufus
Synallaxis" seen in this area before were EXVII's.

COMMENTS: The two flocks described above were only
100-125 yards apart at one time. But, as far as I could tell, they
did not join one another.

The larger of the two flocks probably was largely the
same as one of the flocks seen on May 31. I.E. flocks may be "long
sustained" here.

Sun reaches this area ca. 4:30. At same time, wind
starts to come up.

Everything is very still indeed, apparently deserted, after

Hills 117
22/10
+ 108

these flocks have moved on.

about 1800-1900

9.15. 8000 road. 8:04 a.m. 245 ft. see very large flock flying in the top of VST. Several, in noise, a considerable distance away. They probably, in part, the same as the large flock seen uphill earlier. But, if so, it has become even larger in size. Now includes at least 20-25 inds. Among them are: 3 TX's, 1 or 2 Yellowbellies, 1 Whistler, 2 Ruddy Flycatchers, at least 1 flycatcher TX, 1 Cy (inc?) 2 litters. Group is scattered over a very wide area. But obviously highly organized. TX's probably in lead most of time.

Before group appears, I see a pair of Thlypopsis feeding low in bamboo scrub. Obviously alone. But then three Thlypopsis get "swept after" the group. Thlypopsis f ———> group repeatedly.

Just

8:20. A few yards further down road, see single Pict. fed out and alone. 2 ft up in low, semi-AS, scrub.

8:30. A few yards even further down road, see pair Hemispungus or Carduotenus types very low in scrub by slide. Quiet. Definitely alone. These birds may have been "true" luteovirides!

Just

Then hear long Pict song uphill. NODWAN. Stops. Then hear "Northern Cy" type song across ravine. Also NODWAN. Stops.

8:44. Same area. See single ♂ Yellow-Geoback alone. 10 ft up in second growth tree.

8:48. See single Sooty Thrush (definite) feeding low in scrub adjacent slide.

9:02. 8025 ft. Small Eucalyptus plantation surrounded by thick scrub. See single Yellowbelly 15 ft up in Eucalypt. Alone now. Utters "Zeeeee zeeeee zeeeee zwoor" (Very bonariensis-like!!!)

flack 18 4 birds ✓

Then Yellowbills fly to join mixed flock 100 ft away. Flock also includes 2 Whitestarts, 2 *Megascopus*, 3 or 4 other birds (probably 2 or 3 different species). Highly integrated. Whitestart is definitely in lead. All others follow repeatedly.

flack 19 4 birds 2 spp ✓

A few minutes later, and a few yards back up road, see another mixed flock. Includes 2 Yellowbills and 2 P's! All 2-4 ft up in roadside scrub. P f → Yellowbills

NOTE: This area, with its rock slides, second growth, plantations, etc., looks ideal for *A. rufinucha*. Its apparent absence is very remarkable.

9:25. A few yards further on, see what may be same pair of Yellowbills. Now apparently alone. Feeding between 6 ft up small tree edge of slide.

COMMENT: As far as I have been able to tell, all the species here are feeding in the same ways as in other parts of the Andes.

just

9:41. See a pair of Blue & Oranges moving low through scrub 2-4 ft up. Very noisy. Lots of "see see see ..." Notes. But quite definitely alone. (This is area where Peet was seen earlier this morning, but it is not audible or visible now.) Then the Blue & Oranges move right past an *Ocotea*. No overt reaction of any sort between the 2 species.

9:51. Looking down into ravine where large flock was seen last. See pair Whitestarts flycatching high in trees. Also 3 or more *Synallaxis* being noisy low in mixed bamboo scrub. But the 2 species are far apart. I think that they must both be classified as "alone". The (rest of the) flock seems to have moved on and/or dissolved.

Stop coming back in 10:30 a.m.

Will Will Will 10:32 Back up to lower limit area worked
May 21. See pair of GT's moving thru AS. 8-12 ft up. Moderately noisy.
But definitely alone

Leaving 10:30 a.m.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

May 26, 1966
Cajon Pass

Going to work on Surgo Mesa ridge of pass this morning. Far
ther down than on May 22. Arrive area 8650 ft 5:48 a.m. Clear. Co-
ol. Some fog up hill.

This area seems to be thick second growth scrub with patches
VSTF.

Just miscellaneous bird sounds 5:51. Then brief burst
Whit-throat-frontalis type song. NODWAH. Shuts up. Then quite a
lot of bird sounds by 5:58 (Big Buttercupis ???, also some R's)
Then more presumed frontalis song. NODWAH.

During next few minutes hear a lot more of both R's (which
may be uttered by either Bays or flycatchers) and frontalis song.
Alternating without overlap!!!

Then see group of 3 Whit-throats feeding 4-10 ft up scrub.
Definitely alone. Silent at first. Apparently quite unaffected by fact
that frontalis is singing (NODWAH) 20-30 ft away. Then 1 Whit-throat
ant begins to sing. Presumed frontalis shuts up immediately!!!

Whistler continues NOOWA. Hunts up. Presumed frontalis
to again NOOWA. Perfect imitation of song!

6:16. flightless down road. See pair of atropuleus 1-2 ft
up in low thick scrub (not bamboo) on old side. Strongly but apparently alone.

Then see single Scoty Thrush alone

6:26 see bird uttering R's (NOOWA). It is Paddy flycatcher
2 ft up sparse scrub of cliff. Scoty flycatcher alone 8000 ft.

6:33. Come across atropuleus again. Tell me that there
are 3 inds. of the species here. All moving close together 1-2 ft up
mixed scrub (with some bamboo in it). Picking insects off great
variety of leaves. Uttering "CN"s. Then single Thlypopsis &
→ atropuleus. Lands right beside them. Begins to feed.

about 30
from 4 inds
2 up

Then whole group moves off together. Obviously very highly integrated.
No sign of hostility. Thlypopsis & atropuleus → atropuleus
at least a couple of dozen times!!! And, as far as I can tell, the
Thlypopsis is feeding in exactly the same places, and using the same
methods, as the atropuleus!!!

NOTE: All the Thlypopsis seen around here have had gray
wings and back, orange heads, and orange underneath except for
white patch center lower breast and belly.

See single presumed frontalis alone 2 ft up scrub.

Birds are generally much quieter now. 6:48

Walking back up road, see 2 more Scoty Thrushes alone.

7:01 Back down road 8000 ft. See single Pect silent.
Alone. Feeding low in scrub. Also feeds on ground at least 3 times!!!

but

They come across mixed flock low in second growth scrub edge road. Group includes 3 Synallaxis-types (unidentified), 2 presumed frontalis, and 2 PR Atlapetes. Highly integrated. Synallaxis apparently in lead. Group as a whole usually quiet. But frontalis sing occasionally. Synallaxis-types make some very brief.

NOTE: This is just across road from where Myiophobus - atropileus group was seen earlier. But latter seems to have gone on.

A few minutes later, and only 30 ft down road, come across another mixed flock. Includes 1 Pyatiter CIX, 1 fitta, 2 GT's, 2 Blue & Orange Tanagers. Moving 3-12 ft up small trees edge diff. Quiet but highly integrated. CIX and GT's in front but widely separated from one another. Followed by Blue & Orange. fitta bringing up rear.

This group eventually goes up hill. It does not join the PR - Synallaxis - frontalis group (altho the latter is quite audible and, probably, visible).

7:32 a.m. 8445 feet See very large mixed flock. Includes at least 2 Margarornis (definitely usual species), 1 Pyatiter CIX, at least 4 (probably 5) fittas, 2 or more CIX's, 2 presumed PR frontalis, at least 1 Blue & Orange. When group first seen, the CIX's, fittas, and Margarornis were 30-50 ft up in VSTF trees. Then these birds flew down into very low scrub on slide. Only 1-2 ft up.

And it is only then that I became aware of the presence of the other mixed

Group as a whole moderately quiet. Highly integrated Margarornis usually in lead.

NOTE: The CIX's have light eyes - just like northern

Feb 21
13:45
11:45

Feb 23
13:45
11:45

Pseudopungius

sun has reached most of the area now.

7:58 8423 ft. 5th. glaucous 2nd. I's brown
scrub on side. Quiet. Apparently alone.

Go on down to 8330 ft 8:12 am. Then start back up road.

8:12
10 birds
2nd
2nd

8:28 Not far from where last large mixed flock was.
See what appears to be small flock in mixed bamboo & trees. Includes 2 H. atripulens and 2 presumed frontalis. Possibly others. Very far away from me, and difficult to see clearly.

8:28
3 birds
5 spp

A few minutes later, somewhat further up road, catch glimpses of apparently small dispersed flock in VST trees. Includes 1 maulani-type, 1 Whistler, 1 Mangrove, 1 flycatcher. TIX
Probably 1 or 2 others.

Both these groups may be largely remnants of the large flock seen earlier. But they probably should be classified as 2 separate, non-integrated, flocks now.

Everything is dead quiet 9:00 am.

9:03 8300 ft See single Whistler 4-6 ft up second growth scrub. Uttering "co" s. Alone.

Just

Go back up to car, then start down road again.

Mar long Peet pligase. NODWAH.

9:23. See single Ruddy Flycatcher alone. Probably same ind. seen alone earlier this morning.

9:28 8300 ft See pair ^w Blue & Orange Tanagers. Quiet. ^w flycatcher alone. 2" up scrub edge road. Then fly away into second growth trees.

Just

9.44 8450 ft. See single Red above. Finding small tubular red flower 2-4 ft up scrub edge road of dirt

10.00 8550 ft. See Geothlypis. Apparently above 2-3 ft up second growth scrub

10.04 Clouds coming up, and I am starting back up hill

Still at 8550 ft. see single Blue & Orange fly across road. Set out and done

10.34 8550 ft. See group 2 or 3 flycatcher TX & Flycatcher in semi-NS. 3-10 ft up. Apparently above.

It certainly looks as if mixed flocks tend to "survive" in mid-morning here.

Also see single Ruddy Flycatcher in usual place, 30 ft away. Also alone.

Speak of the devil! Only a few minutes later see definite mixed flock. Includes 3 Chlorospingus types TXIII, 1 CC-like type (TXIV), 1 ♂ Red Woodpecker (apparently same species as in Venezuela), 1 ♂ WCC (blue headed form), and, probably, 1 ♀ WCC. All birds ranging 2-6 ft up thick second growth scrub. In exact same area as PL-frontalis flock earlier this morning. All birds close together. All quiet. Chlorospingus-types probably in lead.

1 Ruddy flycatcher } → group

NOTE: The ♂ WCC was behaving in usual Couropetrum manner. Picking insects off leaves. But perhaps slower and more sluggish than most other forms of the genus (including the white-capped WCC) with which I am familiar.

Same flock back 10:55. Now see that it also includes 1 Th.

March 20
March 20
9.44

WCC

Pet

cyanophala. And then, 1 Pet \rightarrow flock. Then Pet flies and nothing follows

Now see that flock also includes 1 Gray-capped Vireo-type And 2 Whitestarts! And another Ruddy!

Flock gradually moves down hill. Out of sight.

Blue WCC

Is it significant that this flock did not include Seths?? Are Seths and Blue-capped WCC mutually exclusive??

Leaving 11:10 am.

May 27, 1966
Above Barro

Going to start work in area where Barro was heard uttering "zee zee zee..." patterns a few days ago. Arrive 5:51 am Getting light. Clear. Cool. Dawn chorus in full swing.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

6:15 See several sooty Thrushes alone.

6:17 See single Mountain Catanga Perched silent and alone 5 ft up in scrub.

Then catch glimpse of Atlapetes that has been singing. 4 ft up in scrub. Definitely alone. Unfortunately, in such bad light that I can't be sure of species. Probably PL.

SUMMARY:

It may be useful to add a general description of this area. It is a large patch of scrub-forest along stream ravine. Patch is approximately 3/4 mile long, several hundred yards across.

In the center of the ravine are a cluster of tall trees. Most of these obviously second growth. But some, or a few, appear to be "mature VS TF" in general effect. On either side of these trees is thinner and lower scrub, interspersed with small trees. Obviously, second growth. This merges into cultivated land (maize fields) and/or very sparse scrub-grass (obviously the result of cutting and burning over the years).

I imagine that the climate of this area is very humid. Note the relative great abundance of hummingbirds!! Also the presence of *P. Atlapetes* and *Myiophanes*. Possibly the apparent absence of *CC* is another indication of relatively great humidity?)

My impression, during the course of the actual observations this morning, was that the average population density of birds here was high. Looking over my notes, and counting, however, I see that the density of birds of my groups is comparatively moderately low. (Altho population is both denser and more varied here than around Palca.) But it should be stressed that the area is inhabited by a great many hummingbirds, *Sporophila luctuosa*, and a fair number of (other) flycatchers, in addition to the species of my groups. Thus, the population is moderately dense as a whole.

There was a lot of bird noise here this morning. This would suggest that many of the birds here are in breeding condition. If so, this is in great contrast with the birds of the Carpish Pass area (except the presumed *H. frontalis*).

In a way, today's observations were rather a relief to me. I summarized my 1964 Palca notes yesterday — and they seemed

to be far too "extreme" to be true !!! But it is obvious that the situation here above Puno cannot be too different. Possibly identical (if I overlooked very "diffuse" flocks at Puno). Possibly more similar to the situation in those areas of Central Ecuador where highly organized flocks do not occur.

The great question now is: WHY IS THERE SUCH AN EXTREME DIFFERENCE BETWEEN DIFFERENT AREAS WITHIN THE CENTRAL PERUVIAN REGION?

Possibly it can (still) all be explained by factors such as density of vegetation and frontiers.

NOTE: The area worked today is not far from drier region ("and temperate") near the town of Puno itself. The original forest here probably also had an extensive frontier with Puno (mountains here are high). And, of course, as noted above, the area actually is surrounded by cleared land at the present time.

May 28, 1966
Above Puno

Going to work same place as yesterday. Arrive 6:02 a.m.
Clear. Cool

SEE TODAY'S NOTES ON MIXED DIGLOSSINI

COMMENTS:

It would appear that the social behavior of the birds here is more like that of the birds of Central Ecuador than like that

of the birds near Palca

In this connection, it should be mentioned that the area near Palca, around Saruma, is much more arid than the area around the town of Panao. Thus, one might expect to find more gregariousness here than around Palca.

COMMENT: Working over my Carpath notes, I find that gregariousness here is quite incredibly like gregariousness in the northern part of the Western Cordillera of Colombia.

Central Penn, 1766
Carpenter

May 21, 22, 24, 25, 26

No. Inds seen Alone

40 IIII IIII IIII IIII IIII IIII IIII
20 IIII IIII IIII IIII IIII IIII IIII
(89) IIII IIII

Total = $\frac{236}{89}$
325

No Inds in Flocks

IIII IIII IIII IIII IIII IIII IIII IIII
IIII IIII IIII IIII IIII IIII IIII IIII
IIII IIII IIII IIII IIII IIII IIII IIII
IIII IIII IIII IIII IIII IIII IIII IIII
200 IIII IIII IIII IIII IIII IIII IIII
(236) IIII IIII IIII IIII IIII IIII IIII

No Flocks seen

26 IIII IIII IIII IIII IIII

No Highly Organized Flocks seen

16 IIII IIII IIII

No Species in Flocks

20 $\left(\begin{matrix} 13 & 2 \\ 3 & 12 \\ 4 & (X) \end{matrix} \right) 917$

17 $\left(\begin{matrix} 17 & 5 \end{matrix} \right)$

2 2

115 $\left(\begin{matrix} 4 & 2 \\ 5 & 3 \end{matrix} \right) 109$

51 $\left(\begin{matrix} 7 & 4 \\ 4 & 7 \end{matrix} \right) 120$

175 $\left(\begin{matrix} 5 & 2 \\ 3 & 5 \\ 5 & 9 \end{matrix} \right) 136$

82 6
(14) 5

Largest No. Inds in one flock

25

Largest No. Species in one flock

17

183 0070

250

73.20 %

250 $\sqrt{1830}$

1750

800

1450

300

201.250

9 $\sqrt{20}$
19
100

12.50

20.25
20
20
20
20
100

1.05 flocks per bear

19

21

11

19

14

66

5.42

191103

95

80

46

40

29

2

9.63 birds per flock

19 $\sqrt{183}$

171

120

114

60

234
89
325

~~5.42 sp. per flock~~

5.722 sp. per flock

18 $\sqrt{1103}$

90

130

126

40

36

40

172.62

325 $\sqrt{2360}$

2275

850

650

2000

1950

500

Central Park, 1966

Carpenter

Hours

May 21 3 hrs 30 mins

May 22 4 hrs 45 mins

May 24 4 hrs 30 mins

May 25 5 hrs 00 mins

19 hrs 45 mins

May 26 5 hrs 15 mins

25 hrs 00 mins

Above Panoas

May 27, 28, 1966

10 hrs 00 min

Inds Alone

Inds. in Flocks

(32) IIII IIII IIII IIII IIII IIII IIII
(59) IIII IIII IIII IIII

(7) IIII IIII IIII
(15)

59
15
(64) Total

No Flocks Seen

IIII

No Highly Organized Flocks

1

Spp per Rock

4

3

2

2

average =
2.75

Largest No. Inds in One Flock

17

Largest No. Spp in one Flock

4

February 8, 1964
Charapoyas

SEE TODAY'S NOTES ON MIXED DIGLOSSINI

Up into some dry grass area. All seen today were lots of Andean Sparrows, gold finches and 2 red-breasted black birds. I heard several vocalizations which sounded very much like the TWS of H. bonariensis, but I think that they were actually uttered by the black birds.

In general, everything was very quiet.

February 9, 1964
Charapoyas

Going to work this morning in same area as yesterday afternoon. SEE TODAY'S NOTES ON MIXED DIGLOSSINI.

6:13 a.m. - for what seems to be single House Wren alone.

See a pair of Yellow-fronted parakeets alone several times.

See a single red-breasted blackbird alone once, in tree which parakeets moved from time to time.

7:40. See another single red-breasted blackbird alone, in another

area.

9:30 a.m. Finally see a mixed flock of sorts. In area where 2 bright bonariensis seen earlier (see Mixed Diglossini). When first seen group includes at least 1 bright bonariensis, at least 2 (probably more) dull bonariensis, and 1 cyanocephala. All quite close together in area of dense, moderately high, scrub. (This whole area of scrub is quite extensive. Along stream which eventually develops into a barranca.) Group as a whole quite noisy.

lots of TVs and some smaller. Some of the more colorful birds in the bonariensis is, but the cyanocapilla may have added a little. Group is quite difficult to follow. They appear to be disappearing from sight in small

1 Brown fly toward the group. 2 is a small about 15-20 ft away. But does not. I think come much closer (or the Brown fly have been trying to "escort" the group out of its territory). About this time, the cyanocapilla seems to disappear. Then, during one of the periods in which the group (now possible only bonariensis) is not visible, I catch a single glimpse of a single bird which may be A. nigriceps. Getting there now in exact place where the bonariensis were earlier and where they reappeared a few seconds later.

When they reappeared, there was no sign of a refuge with them. Then, a few seconds later, see a single CC and a single Brown quite close to one another and quite close to 1 bright and 1 dull bonariensis. The Brown flies off. Then the CC does. Then the 2 bonariensis also leave. This is the last I see of either the group or the bonariensis.

A few seconds later see a single cyanocapilla in area where flock was earlier. Apparently alone now. Silent. Flies away.

A minute or so later a single Brown (re-) appears in same area. Seen briefly. Disappears.

ADDITION: There were several apparently hostile movements among the bonariensis in the mixed flock. I shouldn't be surprised if there were 2 family groups involved.

If so, it may help to explain why the mixed flock was formed. The noise and activity involved in the intra-specific dispute may be the reason why the group of bonariensis was attractive to individuals of other species. (This might be an indication that individuals who do not usually join other species retain the capacity to do so.)

If in the same place mixed flocks are usual here, it must be due to something like to direct or indirect effects of lower altitude / improved climate, etc. There certainly are no more species of my groups here than near Quito or San Pablo.

Going to woods in same general region this afternoon. Same area where mixed flock was seen in morning 4:32 p.m. Windy & cloudy. No birds visible.

See a single Bruin alone 4:41 p.m.

4:55. See a single cyanocephala alone. Probably same individual seen in the morning. Uttering "Seeet" notes. Flies away.

5:15. What seems to be unmistakably an Orange-bellied Saltator flies by silent and alone.

Undoubtedly, the altitude of this place now, according to my altimeter is 8075 ft. As the altimeter in the same place read 7650 this morning, something queer must be going on! (I think the area may be around 7800 ft.)

Then see another single Bruin (or the same Bruin again) alone.

Then see a pair of Bruins flying about together. One utters (R-tut-tut) when they land together.

A few minutes later, see a single Bruin alone.

5:54. Definitely see Orange-bellied Saltator in numb. Silent and apparently alone.

Then see a single thrush alone. Apparently same big species as this morning.

A few rain drops 5:50. Starting back to town.

NOTE: It seems obvious that mixed flocks are not usual here, at least in the absence of bonariensis.

Just as I am about to leave, a flock of at least 6 (probably more)

red-breasted blackbirds (less a few) birds in scrub, then on to adjacent eucalyptus trees, then move on. Birds apparently alone. Don't attract any of the local residents of other species during the brief period that they are here.

Brown

6:17. Get back to CC Brown. Brown seen. A Brown singing alone from perch on again leaf. Then a ♀ Brown on again leaf about 5 ft away. Then a single bird develops, presumably A Brown ♀. Select. Then both birds disappear.

Brown

A Brown back singing 6:23. But it is now too dark to see well.

February 10, 1964
Chetopayas

Went exploring for roads up to higher areas at dawn this morning. Found some. Don't know how they will work. In any case, too late now (7:15 a.m.) to start mountain climbing, so will go back to area where mixed flock seen yesterday. Cloudy. No wind. Humidish.

See single red-breasted blackbird alone.

Good humors! See a single yellow-bellied seed eater alone!

See a single bright brownie with some other bird. Possibly, yanacop hala. Bright brownie flies off. The other bird does not, I think, follow.

Brown

See single Brown alone.

See single red breast alone again.

Fog coming in 7:35.

CC

There may be a CC singing in grove of Eucalypts Humble. No other diglossines singing at same time.

Haven't seen several single thrushes and pairs of thrushes alone. All up

presently seen yesterday (2x)
See single Brown above again

See according to my altimeter now - 7925

8:04 A hawk up Brown says a few phrases then flies away

8:07 Not well! See single adult Brown feeding single juvenile Brown
father with adult length wings & tail but complete juvenile plumage "Beep"
by wing 8, with wings spread out horizontally. Accompanied by slight BL,
no TV. As far as I could tell, both birds were silent throughout

8:00 See single Prioniturus nigrocapitatus alone. Hopping
silently thru scrub, alone. I didn't see yesterday but where there are no other
birds right now. (I don't think it's definite - crown very black.)

8:00 See single Brown alone again

SEE TODAY'S NOTES ON MIXED DIGLOSSINI

8:55. See another single Brown alone

See a single red breast alone again

See a single ♂ Yellow-greenback alone

Leaving 9:02 AM

NOTE: If the cyanocephala here really does associate with the Cro-
aracus, the reason may be that it is a single bird. There may be no other
cyanocephala around for it to associate with.

This afternoon going to walk up mountain not far from "mixed flock
area. Starting 2:15 PM. 8075 ft according to my altimeter (which seems to
exaggerate in the afternoon)

Cloudy & warm. Not much moving.

Whole area thick with scrub of varying height in different patches.

2:48. 8550 ft See single cyanocephala. Probably another bird we
saw it, but unseen. Possibly another individual same species

Brown
Brown
Gen
Brown

Can see what may be *Prunus* in distance
Another up hill see a single Brown alone

This area looks very much like some of the areas in the Pagoda region
on Jirapung, as it is lower in altitude (9th)

See same Brown again alone. Feeding on white flowers

Lots of humming birds around here

3:07. See another single Brown alone 8400 ft.

Reach approximately 9000 ft, the crest of the ridge, 3:25 pm. Path
goes along thru dense thicket, taller than my head. Almost impossible to
see anything Warm.

3:31. See a single Black & Blue Tanager feeding in thick scrub,
5 ft above ground. Looks just like Black & Blues seen in north, but I note
that this bird has an opalescent green tinge to head & nape. Probably other be
reds with it. See it again a few minutes later, possibly alone

3:47. Keep going further, more or less horizontally. Dead quiet.
(Thinking it over, there was really quite a lot of noise near that Black & Blue.
Probably was a mixed flock.)

4:10. See a pair of that mountain catanga (gray with rufous nuchal crest -
the one I have seen many places before). Apparently alone

No red tubular flowers around here

Up to 9125 ft 4:35. Still quiet as the tomb. Starting down hill.

I certainly don't think that anything much can be breeding around here.
Finally see some pink tubular flowers with holes in them

Still above 9000 ft, see pair mountain catangas alone

Can

Then, almost same place, 4:57, see single *Diglossa*. Either coerulea or
(less likely) juvenile some other species. Dull gray blue (quite blue), darker

Shank, gills yellow. Dorsal up. Head & upper mandible black. Lower mandible
and gape & lower upper mandible sort of yellowish flesh. (No expanded "mottle"
around gape. Same as ... Bird quite alone. eating small passion flower-like
fruit (not yet going into fruit) is small tree 2-3 ft above ground. Utters
a low single "seet" note. Then flies off.

5:00 a.m. See a single cyanocephala a few feet further on. Uttering
thinner, weaker "seet"s.

5:23. See a single bird which I presume is A. torquatus hopping thru
moss, close to ground, silent and alone. (I presumed it A. torquatus but the stu-
pid co. to head looks quite like a different color.)

Starting down hill from 700 ft 5:30 p.m.

8:45 p.m. 5 in. ... sounds like ... by singing area

8:50 p.m. ... then ... then something that sounds like Brown sings.
Then some alternation. With partial overlap. Then no overlap. Then some
overlap. Then presumed by sings alone. (I am certain as I can be of these identifi-
cations.)

See several dark thrushes, without being able to identify them.

Leave 11:15 p.m.

In general, this area has a "biological faces" reminiscent of
Colombia and Venezuela. Viz Tangara varonii and (probably) six
species Diglossini. Why? Two possibly significant facts occur to me
(1) This area is very close to the Marañon. It is possible that the valley
of the Marañon cuts right across the temperate and upper sub-tropical
zones. It is possible, therefore, that this is a "frontier" area. (Which we
uld be particularly nice if mixed flocks turn out to be common here!!!)
(2) The whole physiography of the area is "cut-up" and "jumbled". Moun-
tains (not very high) and valleys all over the place. Thus, even if this

is not a 'frontier' area, in the sense that the temperate and tropical zones are completely cut off from similar zones to the north. The patches of temperate and sub-tropical zones around here may be "semi-insular".

February 11, 1968
Chacabasco

Going up same mountain again this morning.

Starting out ca 5:15. Pretty cloudy. Cold.

First bird sounds heard ca 5:40. A rather weak and faint Tinamou Chorus in full swing 5:58. Some Thrush-like, some Brown B. patterns, and a lot of stuff I don't recognize. I am about 1/2 way up the mountain now, and have yet to hear anything very like DC.

Some Brown 'frontier' type songs & 12

See a single Brown singing alone.

6:25. Hear what sounds like a torquatus in area where going along. Almost alone.

A few minutes later, hear what is obviously song of A. ruficauda or A. robustus in adjacent area.

SEE TODAY'S NOTES ON MIXED DIGLOSSINI

Starting up to 9000 ft level 8:00 a.m.

At 9000 ft, here torquatus same place as before.

See a single Tou belly alone. Possibly same individual as before (see diglossini notes). Red patches look quite orange.

See single Brown alone.

9:15. See 1 or 2 Black & Blue Tanagers apparently alone. Slightly

about 9000 ft.

COMMENTS. None of my observations yesterday or this morning suggest that organized mixed flocks are common or even common. Even if mixed flocks are more common here than near Quito or in central Peru, this may mean only that the species here are not keeping apart from one another by special methods.

Although both Trochilidae and some Alcedinidae of the rufinucha a - schultzei type occur on the mountain ("Tinjaja") here, they both may be relatively rare. Thryothorus, by contrast, may be quite common, but they are difficult to see and identify in the very thick scrub here.

Which brings up another point, ... the scrub on Tinjaja is probably thicker, on the average, than at any other place I have ever worked.

A peculiar feature of the local avifauna is the relatively low altitude at which many species occur. The Uruba here is certainly lower than the other subspecies of lafayensis with which I am familiar. The Trochilidae also may be relatively low here. And varrovi ?? And the "Coer"s ??

Going to work below Chachapoyas this afternoon. Start way at bottom of barranca leading up to same range of mountains where I worked this morning and yesterday afternoon 7150 ft. 2:50 p.m. Cloudy.

No! Going to try similar barranca a little higher up. 7310 ft. 3:00 p.m. Starts out as region low sparse wet scrub. Bracken

Everything seems quite dead 3:30. No birds of this region certainly do not seem to be active in the afternoons!

Well! 3:35. 7425 ft. See single A. rufinucha alone in relative

ly dry & open near upper edge of ravine. Uttering "Tut" "Tut" "Tut". This refusa has no trace of mounted. Does have white wing patches

Actually, when I come closer I find that there are really 2 Actopelia here. One looks just like the refusa, but is heavily streaked with blackish or yellow underneath parts. Is the same as refusa 2 - also associated with the birds for the 1st & 2nd. Either superciliosus or (more probably) luteoviridis. Also uttering "Tut" or "Tut" 1 Prunella as if \rightarrow refusa. Then one Prunella is attracted in the conversation and joins the group, but apparently doesn't stay long. The actual area where the group is is 7470 ft. Group moves down hill out of sight.

I guess I may presume that mixed flocks do occur here with some degree of slight frequency!

3:53. See single Prunella alone.

4:15 Up to 7630 ft Area of dense but low, obviously young, and moderately humid second growth. Sun has come out and a little wind has started. Still nothing much moving.

God! What a lot of mosquitoes and biting flies there are around here!

Starting downhill 4:25 p.m.

Down at base of bananae in single large thicket. Same species as around Chachapoyas still. So far the only species I have been able to see well in this region!

Leave 5:00 p.m.

Then work in Prunella - Prunella - Claytonia.

See single bright luteoviridis alone

Leaving 6:05

NOTE: I am beginning to think that the occasional occurrence

(11)

is of mixed flock - in this region is a very good thing for my hypothesis
is. I don't know the mixed flocks how can be explained as anything
but a "plateau to frontier" condition. The region certainly is not
as hot as even the Hono and Puna areas. And not only are there
relatively few species here, but there are also relatively few individuals
of the species that do associate in mixed flocks.

February 12, 1964
Charles J. G. S.

Going to work on *Turdus* again this morning.

SEE TOP 12 NOTES ON MIXED DIGLOSSINI

17:10. See pair of *Cyanocycla*, pair of *Firebellies*, at least 1
A. rufinucha in same general area of scrub. But not very close together
and the 3 species seem to move off in different directions. (This area is not far
from the area of the single "Loer" watched yesterday.)

See single *Torquatus* alone in same general area a few minutes later.
A. torquatus is certainly the overwhelmingly dominant land-
bird in this area. Because the vegetation is so dense?

This afternoon going to work along another road, the road to
the airport, slightly above the town.

Beach area scattered low scrub, 8170 ft, 3:15 p.m. Area looks rel-
atively arid, but there is no cactus. Apparently nothing around but some An
dean Sparrows. Lots of wind!

Give up because of wind. Go along another road, the one to Mendoza
Arrive site 7900 ft 4:05 p.m.

Lots of hedge, with agave, some of it in flower, but nothing except

Hummingbirds moving around yet 4 25 Woodhouse's ...
Lots of hummingbirds in Agave Calceolaria ...
5 20 see a pair of very light colored ... (species ...)
5 30 see a single ...
Leaving 5 35 pm

February 13, 1964
10:15 am

Going to work near the town, where I saw the fruit ...
(Bonariensis - cyanocephala etc.)

6.21 see a single large pale ...
Hear what sounds like A. rufinucha song
6.45. see single ...

SEE TODAY'S NOTES ON MIXED DIGLOSSINI

I am not sure exactly what is the breeding status of many
of the local species. All or most of the Diglossini seem to be more or less in
reproductive condition. So may be the Bonariensis (they are uttering lots of
TW's) and possibly the cyanocephala (I have heard some 'twitter' in
them). But the A. rufinucha do not seem to be very active. Nor the
Arubellies

Northern Peru
Chachapoyas - Hill above town

No. Inds seen above

|||| |
 ||| |

(2)

No. Inds in Rocks

|||| (2)

April 190

No. Flocks seen

|||

No. spp. per flock

2

3

2

No H.O. Flocks seen

Largest No. Inds one flock

Largest No. spp. one flock

Northern Parula
Chachapoyas - on hill above town

Hours Spent

Feb. 10 4 hrs 00 min

Feb. 11 4 hrs 30 min

Feb. 12 4 hrs 30 min

13 hrs 00 min

Anteoro
June 12, 1966

Arrive town in afternoon. There is a mixed fog and rain. Altitude of my hotel is 845 ft according to my altimeter now. It looks as if there is little or no natural vegetation left near the town. But there probably is some second growth scrub.

Go for walk outside town. Pass over second growth & small trees & through in pasture-like field. And see definite mixed flock. Includes 1 Amphispiza bilineata. All dark gray, with definite streaking above & below. Presumably Atty - but looks somewhat large. Also at least 2 Bonaparte's or Harris's types (possibly intercedens). 1 adult and 1 juv. Juveniles are fed by adult. Also 1 bright bonapartei and 1 verreauxi (either pepper or shrike or verreauxi - which ever one is gray, blue, and yellow, with conspicuous rufous "spectacles"). I shall call this verreauxi "CXXII".

Group as a whole quiet and diffuse. But possibly highly integrated. All birds going same direction. All in trees & scrub ca 20 ft up.

ADDITION: See single Atlapetes torquatus on ground, just below (out of) flock.

NOTE: This area is approximately 8625 ft. I began to observe here ca. 4:20. Saw flock at 4:30 pm.

Then see single Sooty Humbird alone.

4:55 pm. A little further on, region of thick and damp but low scrub. See single M. cyanocephala. Silent. Perched 3 ft up. Definitely alone.

5:14 pm. See what appears to be PL Atlapetes. 2 ft up in "hedge". Silent. Then see pair Yellowbellies 1-2 ft away. Apparently this is a mixed flock. But probably not highly organized. Atlapetes disappears. Leaving Yellowbellies apparently alone now.

5:44 pm Walking back down road. See another single Yellow throat. Silent & alone. 10 ft up in tree in "hedge".

5:53. 8650 ft. See single Orange-bellied Saltator alone in "hedge" by road. Silent 3 ft up.

5:54. Down near where first mixed flock seen this afternoon. See single torquatus. Silent. On ground and 3 ft up in scrub. This is presumably a bird that was with flock earlier, but now it seems to be alone.

Stopping observations 6:05 pm

Cutroo,
June 13, 1966

Going to work same place this morning. Somehow I oversleep and don't arrive until 6:30 am. Relatively warm. Foggy.

7:01 am 8650 ft. See group of 2 or 3 Basileuterus moving thru hedge. 3-5 ft up. Apparently nigrovittatus. Noisy. Apparently alone. (There is a Guiraca near them briefly, but surely this association is either hostile or coincidental.)

A few minutes later, same area, see single M. cyanocephala 20 ft up in Eucalypt. Then hear northern Cy. bairdii same tree. NODWAH. Stops. Then cyanocephala sings. NODWAH. Stops. Then the

two species alternate phrases without overlap. Then cyanocapitata
fly about up. I continue NODWAH

There is a pair of Cinnamon Woodpeckers (EXXIII) in
some trees

Probably, the Cy. cyanocapitata and woodpeckers should be
considered to form a loose flock

Cinn Then a single Cinnamon Hummingbird attacks one of the Cin
nimon Woodpeckers !!!

A few minutes later, slightly down path, see pair of Yellow-
bellies 4-10 ft up in hedge. All feed apparently alone. Then single
Atter (probably Atter) → Yellowbellies. Then Atter flies
away. Then I see single Cinn Hummer very near Yellowbellies.

Cinn Is Cinnamon Hummingbird allogregarious here now?

7:30. Just a few feet up road. See pair of Cys flying about
Both in hedge and Eucalypts. Apparently followed by pair of Yellowbe-
lies. Obviously same pair seen before. They stick to hedge under Euc-
alypts. Then single Atter f → Yellowbellies. Then Atter goes up
into Eucalypts. I E. territories of Cy and Atter are at least partly
overlapping here. Altho I have yet to see inds. of the 2 species close
together here.

Cinn Cinnamon Hummingbird and Woodpeckers are still around
in general neighborhood.

So perhaps all the birds I have seen so far this morning
have been members of the same loose social group !!!

Cy (s) Aug (s) again and again. All NODWAH. Then shut (s)
up. Then I hear some presumed Atter R-Za Za patterns. Then I hear

Alt

ground after foggy morning. Then they shut up too.

Then I see 2 Orange-bellied Flycatchers in same small tree as Yellowbellies!!!! Only 2 ft away. One of the flycatchers is juv. Begs from and is fed by adult.

Follow path up hill. Sound of insects very low and poor. Cooling the further up I go. In sky at 8:30 a.m. 7000 ft see another mixed flock in distance. Includes 3 Atlapetes tricolor, 1 or 2 P. virens types, possibly others. All in low thick scrub 2-3 ft up. All quiet. But all close together. Group obviously highly integrated.

Fog has lifted now.

8:44. See single Sooty Thrush flying alone.

8:59. Just a little bit down road. See group 2 or 3 Atlapetes. Low in low thick scrub. The specific identity of these birds bothers me. Their crowns are definitely rufous in front. Much lighter (yellowish?) behind. And they do have a white wing spot. Could these be rufinucha ??? And could they be the same as the birds I identified as tricolor earlier ???

Everything dead quiet now.

Alt

8725 ft. 9:45 a.m. See single Atlapetes apparently alone. 4 ft up in fairly high thick scrub.

9:55. Down near where large loose flock seen earlier this morning. See single Cy. 60 ft up hedge. Definitely alone. Silent. Feeding on small red berries. Using same technique as Cy. in Venezuela.

Then see single Th. cyanocephalus. Also silent and alone. e. 40 ft up in Eucalypt. 100-150 ft away from Cy.
A few minutes later, see definite mixed flock in scrub 40-

50 ft away. 2-3 Yellow-bellies, 2-3 Atlapetes. Atlapetes
apparently refrancha. Atlapetes just Yellow-bellies moving ca. 12 ft
up. 3-8 ft up. Yellow-bellies are moving. Atlapetes moderate
to group observed. Slightly integrated. But I can't tell who, if
anyone, is leading.

There is some small bird of another species around in gener-
al neighborhood. And a single Sooty Thrush; —————> group. App-
arently only briefly.

COMMENTS: Mixed flocks seem to be surprisingly common here
in view of the fact that the natural vegetation (which must have been
VSTF-AS) seems to have been completely destroyed.

This must be correlated with the fact that the area must ha-
ve had relatively long frontiers with the humid sub-tropical zone.
Certainly a good deal of the farmland we passed yesterday, on our
way up from Chucayo, looked quite humid.

NOTE. We also passed large patches of VSTF forest, ca.
8500-10,000 ft, near a place called La Montana, not very far from
Chucayo (2-3 hrs). Northwestern Peru must be the most southern
part of the tropical Andes where humid forest, in the "temperate" if
not the "sub-tropical" zone, still occurs on the western side of the range.

10.45 a.m. See single Cinnamon Wood pecker. Apparently alone
in hedge 10 ft up. Near

Stopping observations 11:00 a.m.

Going to the countryside on other side of town this afternoon. Re-
ach outskirts 8590 ft 1:50 p.m. Cloudy. Windy.

See a single Sooty Thrush alone. In hedge by road.

2:34 pm 8760 ft. See single Atlapetes. Probably major.
Apparently alone 2 ft up in extensive area low scrub.

Track out of ridge. See what looks like real VSTF a few hundred feet down hill and 1/2 mile away. It's a very large patch, but quite unimpressive. Then, later, I am going to explore scrub higher up forest.

2:46. Not much further on. See single Th. cyaneoplus fly by. Silent and alone.

See a tree fern in second growth here.

Then see another single Sooty Thrush alone.

NOTE: There really are quite a lot of birds here. Unfortunately they are staying hidden most of the time.

Go on down to upper edge forest isolated patch VSTF. 8760 ft.
3:32 pm Quite a lot of miscellaneous bird sounds audible. But nothing visible yet.

3:40. See family Atlapetes. 2 adults, 1 juv. 3-6 ft high. In low scrub between fields. Definitely alone. There are the birds which look rather like tricolor and rufinucha (CXXIV). But I am fairly certain that they really are pure rufinucha.

3:50. See pair blue & yellow tanagers. 20-30 ft up VSTF trees. Almost certainly Yellowbellies. There may have been another bird of another species (flycatcher?) with them part of the time.

Then follow narrow path up thru VSTF-scrub. 3:58 pm 8825 ft. See small flock 2 Blue & Blacks, 1 Sooty Thrush (see!). All 2-3 ft up in scrub under low VSTF trees. All close to getting Sooty Thrush f. —————> Blue & Blacks

Go on back up to crest of ridge

5:13. See single presumed rufinucha (XXV) low in some
bush on side of road. Also hear tanager (probably Yellowbelly) 20-
30 ft away in hedge on other side road. But the 2 birds do not
seem to be together. Tanager eventually flies off. Nothing follows.
Stopping observations 5:35 p.m.

June 14, 1966
Cartero

This morning, I am going to work in the same places as
yesterday afternoon.

Arrive crest of ridge 5:32 a.m. Dark. Foggy. Light
rain. Windy. Everything quiet.

First miscellaneous bird sounds 5:44. Lots of Andean
sparrow-song by 5:55 a.m. But it is still too dark and foggy
to see much at 6:00 a.m.

Quite a lot of bird noises by 6:05 a.m. It also is getting
much lighter now.

6:27 a.m. See single Yellowbelly. Apparently alone. In patch
of thick, high second growth. Going from small tree to small tree.
Perching 12-20 ft up. Singing.

Fog is getting thicker now.

See single Sooty Thrush alone.

Birds in general have become noticeably quieter by 6:40.

7:10 a.m. Starting down path to VSTF - even though fog is

still thick

Manage to get myself lost in fog. In course of looking for
e. L. orange Cuck (Hummers) alone in forest of edge of VSTF

Going to try going lower hill again

That would be Spizella I think. The species is
common here

14:46 2400 ft. Hear several Myiophobus song N. W. A. H.

7:51 A few feet further down. See one Myiophobus
Silent and alone. Feeding 3 ft up thick moist (No. 1). I still think it
at this is rufinucha. But the back of its crown, patch on throat is very
pale - altho much too broad to be pallidum.

A little further down, see single bird perched about an
d alone. Fog is very thick. Is impossible to identify bird definitely.
Probably Th. cyanocephala.

8:03 a.m. Fog starts to lift a little. Just as I am reaching
VSTF area reached yesterday afternoon (this time, I found the right
+ path!).

See a single Sooty Thrush fly by alone.

8:04 2070 ft. See single Orange-bellied Saltator alone 2 ft
up in thick moist scrub (sic!).

It certainly looks as if fog does not encourage the formation
of mixed flocks here!!!

8:25 a.m. 8670 ft. Fog pretty well lifted. See definite mix
ed flock. Includes 2 Blue & Blacks, 1 Prodentornis type. Latter
very noisy. Uttering R's. Sounds like microcrinites. All birds
close together. 10 ft up in VSTF - scrub, edge pasture.

8:30 See another single Scaly-throated alone.

8:35 See one Scaly-throated alone.

8:40 Some distance away, see a group of Spine-bills 10 ft up in VSTF and young Scaly-throated join them. There are also lots of Hummingbirds in same tree. All Canaries fighting among themselves. Canaries are common here. Then Yellowbills disappears.

A few moments later, see no Th. cyanocephala 20-40 ft away in scrub. Then see pair of Atlapetes XXXIV, presumed sc. m. cha, 20-40 ft away in same scrub.

None of these groups appear to be alone. But the XXXIV's and the cyanocephala, at least, are moving roughly parallel.

Then all birds disappear, and area is quite deserted for at least the next 10 minutes. So I think that all these birds (except the Canaries) should be classified as forming a loose flock.

See trying to break through 9:10 a.m.

9:12. Some little distance away, see what may be another group of 2 or 3 Atlapetes XXXIV in scrub edge VSTF. Certainly alone (now). Quite noisy. Moving 3-10 ft up.

9:20. Then some other bird, almost certainly another species, the XXXIV's.

CORRECTION AND ADDITION: 9:23. Go on a little further 8000 ft. Ahead of path being followed by Atlapetes group. See single CC (definite) feeding in scrub 3-5 ft up. Silent. Feeding white flower heads. Apparently alone. Disappears. But, then, immediately, a single Th. cyanocephala, a single Yellowbill, and a pair of Atlapetes XXXIV appear in same general area. Then a see

and Yellowbills, also appear. In some birds low level. Yellowbills and M. cyanocephala coming in. Both feeding on same species small red berries. All of them low in number. I & all my records of Atlapetes, etc. in this particular area 8000-8400 ft refer to birds belonging to single flock. Flock includes 2 Atlapetes, 2 Yellowbills, 1 M. cyanocephala, and (presumably) 1 CC. Flock sometimes very coherent, more often diffuse. But certainly highly integrated.

COMMENT: It is my impression that flocks of this size tend to be diffuse more often than not.

Atlatl CC ADDITION: A single adult Atlatl (definite) arrives to escort this flock. Feeds tubular red flowers. Silent. CC not visible or audible at the time.

Atlatl CC D. E. territories of Atlatl and CC here are at least adjoining. Probably at least partly overlapping.

Atlatl CC 9:30. Flock still here. Now a Anna Hummer appears. And attacks M. cyanocephala !!!!!!!

10:00 a.m. Flock flies down hill. Now I see that there is a second M. cyanocephala with group.

10:05 See single maroon vented montane cotinga alone.

10:10. Area where Broadbills - Blue & Black flock was seen earlier. See another mixed flock. Includes 2 Atlapetes (low in number), 1 M. cyanocephala, 1 Yellowbill, 1 vireonid (same species seen with another flock a couple of days ago), 1 Elaenia type flycatcher. All the latter species in trees. Group obviously highly integrated. First Atlapetes in lead; then M. cyanocephala. All

mod. - 10:00 am.

There must be some group seen a few minutes earlier. But I saw only leaders as of the Myiophobus XXV. The cyanocephala - yellow-bellied a variation forms the nucleus of most mixed flocks in this region!!

A few minutes later, across pasture, suggest second growth scrub. Hear Myiophobus XXV. Also see Atlapetes XXIV, 1st Elanoides-like flycatcher, and 2 or 3 flycatchers of a different species (possibly Myiophobus XXV). Also see type 10-12 ft up trees. All others low in scrub. This would seem to be another different flock.

10:35 am. A little further down. See pair of Th. cyanocephala apparently alone. 10-20 ft up VSTF trees. Silent.

Then see a single sooty Thrush alone.

Then see pair Orange-bellied Saltator alone 20-25 ft up edge VSTF. Quite noisy.

Go on down to 8500 ft, 10:45 am. There is another patch VSTF here. But everything seems fairly quiet.

Then see single Th. cyanocephala. Silent. Apparently alone. 6-12 ft up edge VSTF.

Starting back uphill to ridge 11:10 am. Arrive crest 11:30. See single Atlapetes XXIV low within scrub-old field. Silent. Apparently alone.

Stopping observations 11:45 am.

Going to work on opposite side of town (area first visited June 12th). Starting 2:45 pm. Weather is mixed sun and cloud. Windy.

SEE TODAY'S NOTES ON MIXED DIGLOSSINI

3:25 pm Reach area where I saw the flock yesterday.
Flock not seen, not hear now.

3:35. Young higher now, following different path from yesterday. Scrub is getting poorer and sparser along the path.

Reaching patches slightly better scrub 9:45 to 4:00 pm.
But everything is very quiet. Sun has not reached here, and it is cold and windy.

NOTE: Soil is very sandy all over this area. How much of the sparseness of scrub might be due to adaptive factors.

4:12 pm. Reach area which looks rather like upper end of Parano de Juasca! 9310 ft.

4:25 See a single sooty Heron fly by.

Start down hill again 5:00 pm. Reach area where I have not been before 5:20 pm.

5:24 8840 ft. Hear a pair of small dark birds — apparently *Attila* — from low fern scrub. Apparently alone.

A little further down, see single sooty Heron alone.

5:45. Down where large mixed flock seen yesterday. See another flock. Includes 1 Yellowbelly, 1 *Cinn.*, 1 obscure bird which appears to be juv. *Diglossa* (cf. ?), and 1 bird which appears to be *Thlypopsis* (sic!) — the species which is orange underneath except for center of breast. All birds quiet. 10-20 ft up in tree. Group apparently highly integrated.

5:58 pm. A little lower down, region thick low scrub. See 2 *B. microscutatus*. Probably adult and juv. Hear begging noises. Birds apparently alone.

Stopping observations 6:25 p.m.

NOTE: I am not including my high altitude observations this afternoon in my formal counts of gregariousness. But I am including all the others — and lumping them altogether, simply because the species are essentially similar in all the other areas.

COMMENT. I certainly saw no mixed flocks at the higher altitudes this afternoon. If this is characteristic of the area, it is easily explained. This area is an isolated "patch" of moderately lush scrub. But it is close to Patanao (Panao), and probably always was largely or completely surrounded, on three sides, by very poor sparse scrub (produced by edaphic factors).

June 15, 1966
Cuttero

This morning, going to try to reach the higher altitudes reached yesterday afternoon. My departure is delayed by fog.

SEE TODAY'S NOTES ON MIXED DIGLOSSINI

6:20. Just above 9300 ft. Region poor sparse scrub on boulder slide. See pair presumed rufinucha (CXXIV). 2 ft up low bushes. Silent. Definitely alone.

6:38. 9375 ft. See a single Atlapetes CXXIV. Uttering "PN"s. Apparently alone. 2 ft up region thick low scrub.

Eventually, go much higher up mountain

8:52 a.m. 10,075 ft. Area mixed scrub and (AS-USTF) forest. See pair Yellowbellies 10-12 ft up AS trees. Quiet. Definitely alone.

Going to start down hill, slowly, 9:25 a.m.

10:20 a.m. Quana. Elevation 7200 ft. See page 211.

CXXIV alone. Probably same pair seen before.

Reach area down by town. 10:40 a.m. before 10:40 -

11:00 a.m. down road close to town. 8200 ft. See page 211.

(juv) and single Green Heron together close together, 4 ft up, ledge. Presumably this must be classified as a loose flock. Then hummingbird flies away. Leaving woodpecker definitely alone.

Stopping observation 11:04 a.m.

COMMENTS: My relatively brief observations of this higher altitude area worked this morning would suggest that it is strictly comparable to the area above Palca. I.E. Alloceps equimaculatus is O. (The 2 areas also are similar in other ways. Both are humid, but are surrounded by areas of grassland and/or very poor, sparse scrub. Both are inhabited by impoverished faunas. Altho both faunas include species which are gregarious elsewhere.)

Why is this area inhabited by Yellowbellies and (presumably) rufinucha, while the Palca area is inhabited by Greenbellies and Al. altapetes ??? (This difference may be nothing more than - another - example of the "random" nature of "competitive success" in the Andes.)

The fact that both M. cyanocephala and mixed flocks are both absent at higher altitudes here might suggest that cyanocephala is the "vital ingredient" in other flocks of this region. But I doubt it !!!

Cutthro Jan 12th
Areas where flocks seen

House Sparrow

Jan 12

1 hr 45 min

Jan 13

4 hrs 30 min

3 hrs 45 min

Jan 14

5 hrs 00 min

1 hr 30 min

Jan 15

0 hr 30 min

17 hrs 00 min

Cutthro Jun 1956
High altitude area without flocks

Hours Spent

June 14

1 hr 00 min

4 hrs 30 min

5 hrs 30 min

Cutervo - June 1966

14/15

High altitude areas without flocks

No. Inds. Seen Alone

No. Inds. in Flocks

|||||

(11)

(0)

10710 = 26 1/2 x 10 1/2 x 10 1/2
10711 = 26 1/2 x 10 1/2 x 10 1/2

January 21, 1954
Hono

11:00 AM 6-30 AM. 2 birds in the same tree
One singing with full song. The other sings a few notes in the background.

Proves of the males about
6:15. There is a few birds in the same type of song. Utters
at least a single fairly long note. The other
see what appears to be a single note. They are in the same tree. Apparently
quite alone.

6:20. A few birds in the same type of song.
A few birds in the same type of song.
Utters songs less common now 6:23. Still some fairly long songs.
See a single C feeding alone in a nest. Presumably utters 1 or 2 song phrases
as they approach almost immediately.

6:24. See single fairly long uttering "Is-ah" type songs from a cop-
ed perch at least 50 ft above ground in Eucalypt. Again - different tree.

6:35. See single *Diglossini* singing 25 ft up in Eucalypt. Presumably
a C, but looking very dull. Juvenile?? Song phrases preceded by several in-
troducing "Is-ah" notes. Each phrase itself quite prolonged. Very rapid and too
uttering also moderately soft. Not very much like other songs. Also given
in type?

A few minutes later see what is probably same bird uttering similar
songs in adjacent tree. There is also 1 *Thraupis bonariensis* in same tree. Ab-
out 20-30 ft away. No reaction between the two birds. Then the *bonariensis*
flies to another tree 50 ft away. Utters several "Is-ah" phrases. Apparently

by quite alone In bright plumage Male

Great brownish plumage. I saw some brownish to brown like "V" then
uttering or other additional sounds to. Yellow of white bird perched in tree, exposed
ed, 40 ft above ground. Unmistakable position.

(P) Lots of wren songs now to 4:30. Notes about it is completely silent.
Some blue Empidonax presumed Cys. feeding and singing high in Eucalypt.
6:50. Hear Dendroica singing in scrub.

6:58. Great silence is almost all over by now. No I. really
after Dendroica, or bowmanus song. Some Empidonax song in. Little
see single after. Alone. Sings in brush with R. 3-3-3. No fords
silently. Adult.

Everything very quiet 7:05

Single thrush flies by

See a single Atlapetes rufinucha hopping through scrub. Uttering
lots of "Zil" notes. Apparently quite alone.
See a pair of thrushes. Alone.

(P) Hear more presumed Cys singing high in Eucalypts. Finally see
one bird. Apparently adult Cys. Songs with introductory. Just a. Main body of
phrases high & formless. Apparently overlapping and clashing with another bird
in distance. Latter probably another Cys. Uttering similar formless phrases. Little
or no trace of doublets in songs of either birds. Then the nearby bird flies
over to join distant bird. Now we that they are both Cys. Apparently mates.
No obvious hostility. Hop & fly thru trees & scrubs. Not too close together.
One or both sing(s) from time to time.

(P) I think that my identification of a juvenile Cys earlier this morning
may have been mistaken. The bird may have looked dull because of dim lig
lit.

After 8.00. In such performances 7.58.

ay
W

ay

After 8.00. The song heard today less like the song of *Itor* than
was the song heard before? If so, is this because the *Itor* are no
longer singing? The song of the *Itor* heard before continued "by other
song." In the woods, do I hear as tend to sing what other *Itor* were
getting near? In the birds heard in the western Correllia of Colombia

See pair of *Fucibellies*, 1 *Althipis torquatus*, 1 *Itor* all fairly
close together. *Fucibellies* fly away. *Althipis* follows. Then *Fucibellies* fly in
opposite direction. *Althipis* does not follow. *Althipis* apparently "accident
al".

A few minutes later, 7.16. In the *Itor* in birds where *Fucibellies*
were earlier. But *Fucibellies* apparently gone now. *Althipis* has appar-
ently left.

See a single *Althipis*. Supplanted by *Itor*. Who then moves on.
Itor has been apparently all blackish, with coral bill, legs, and eye
ring.

ay
ay

See pair of *Itor* alone

Aerial chase involving 2 adult *Itor*. Silent. Alone

Then see single *Itor* alone in Eucalypt

See single *Itor* alone. Another

See a single *Itor* singing alone in Eucalypt

See a pair of *Fucibellies* alone in another Eucalypt 7.55.

Again see single *Itor* alone. Probably same bird as before

8.02. See 2 or 3 *Basileuterus* type birds moving thru hedge. Gener-
ally yellow-olive, with grayish heads (dark streak thru eye?) III

Silent. Apparently alone.

See a single *Itor* alone

ay

CS

2:00. See single Gy in same patch of scrub as 2 or 3 other. None of
another species. Later not seen well. Possibly the Parulaterus similar to one
previous years (Which I still call Common Parulaterus). Many other
ing smaller. But Gy does not fly to the other birds when they fly
across ravine.

Alter
Alter

Single Alter flies by. Alone
Apparent fight between this and hummingbird. With R-2
Absolute, no trace Alter song now
See a single Gy alone.

CS
Alter

See a single Alter alone. (All Alters seen today have been adult. All
references to "Alter" don't count throughout these notes will refer to adult.
Young birds in immature plumage will be specifically referred to as "juveniles"
See a pair of Melospiza feeding in thick scrub along ravine. Apper-
ently silent and alone. Apparently feeding on insects 8:45.

There are enormous numbers of many kinds of tubular red flowers here
now. Probably more than when I was here on previous years. And the Eucaly
pts are in bloom.

I wonder why I haven't seen any Myioborus today ???

CS

8:55. See pair of Cs feeding on Eucalypt flowers 20 ft above ground
d. Alter several "Zeewee..." type song phrases. There is not overlap type
along phrases of single Gy in adjacent tree.

CS

See a single rufinucha alone in low scrub.

Alter

See an apparent pair of adult Alters moving around together without
obvious overt hostility! In scrub. Disappear immediately.

See single rufinucha again. Still alone.

Alter

CORRECTION: It is a pair of rufinuchas
Hear apparent Alter song 9:14.

Leaving 7:20 a.m.

I could tell today, all or most of the species here were just about as vigorous (or non-vigorous) as during my previous visits here so I guess that my published accounts are correct!!

Although quite a number of species sang this morning, most of them did not sing very strongly or for very long. Obviously not the height of the breeding season for them.

CC
Alter
The only conspicuous exceptions were the Cys. These sang at least as much as the Cys. observed on previous occasions. Possibly breeding. (A difference in breeding seasons might help to explain how the Cys and Alters manage to co-exist.)

Then afternoon walking in La Trinitaria area. Arrive 3:20 p.m. Area very different from a few years ago. Lots of trees cut down. Lots of what was scrub now planted in crops.

Lots of the plain Catamora about. Not singing. Hear a ♂ bonariensis uttering twitters. Alone. Hear some Catamora songs in distance.

3:45. Hear TW phrases by bonariensis in distance. Nothing here. Leaving 4:12 p.m.

Arrive Cotacalla 4:35 p.m. Lots of trees cut down here too.

See pair (♂ & ♀) of Blue-crowned Euphonias feeding in low open scrub near grass. Also. Then 1 Phrygilus plebejus ♂ → Blue-crowns. Then 1 Andean Sparrow ♂ →

CC
Alter
Brunn
As far as I can tell, there are neither CC's nor Alters around here. Rather surprising, in some ways, as the general aspect of the area is not unlike that of some of the areas where CC's and Brunnus were common near Tarma. But there don't seem to be any tubular red flowers here.

6 It may also be difficult for C to compete with a large lot of
plebeians as large and dense as the one here.

NOTE: This time of the year is supposed to be the beginning of the
rainy season. But I am told that the rains have not really started
yet — or, at least, are much less abundant than usual. Certainly everything
of looks very dry.

5:20. See a single Yellow-spotted Flycatcher. Alone. Silent.
Leaving 5:25.

January 25, 1964
Alonso

Arrive usual spot 6:25 am (after difficulties). Clear and
cold. Little wind.

Laf Laf singing when I arrive. Song sustained. Usual form of songs.
But tone a trifle "thin". I think that almost all notes have a faint rattle
(a undertone).

Laf
Alon
6:30. Several other Laf singing in distance.
Hear what is probably one Alon song.
See single thrush. Alone.

Laf
6:35. Diglossine song stopped. Then hear Laf again.
6:57. See single blue and yellow tanager in thick scrub. Apparently
alone. Ah! It is Dubusia. Silent. Hopping about in thick scrub and low
trees 5-10 ft above ground.

6:45 Still a small amount of song, primarily by clowatores, then
wrens and wrens. But in general it is fairly quiet (just as it was earlier, when
I arrived). Obviously not the height of the breeding season here for most

species.

Laf
Laf

A few Laps still singing
in single Laps in thick scrub. Alone.
Very quiet 6:55 & on.

Laf

Then hear Laf(s) singing again. Then Laf(s) stop(s). Then hear
1 or 2 phrases by what is either C or Alter. Then silence again. Then more
Laf song. Apparently uttered by 2 birds close together. Hidden in thick scrub.
Then silence again 7:05

Laf

Everything had silent 7:20.
Then a burst of singing by 2 Laps.
See a pair of thrushes. Alone.

Laf

See a single Laf singing from exposed perch. Quite alone.

Laf

See a pair of Laps engaged in what appears to be a dispute. Alone.

Laf

Also see pair rufous moving thru thick scrub Laf territory.

Silent. Laf and rufous apparently ignore one another.

7:38. See a pair of rufous (possibly same pair as before) moving
silently thru low thick scrub. Silent. Definitely alone.

Laf

See single Laf alone.

Alter

See a single Alter singing alone.

See another single thrush alone. The thrush here seems to be the same

species as at Hono.

Alter

Laf

See another single Alter singing alone. During part of the time that
it sings, its phrases overlap completely those of a Laf singing far away down
hill.

Laf

Alter

C

Laps still singing occasionally 8:45

See a single Alter alone.

Have C's disappeared from here? Or are they just hidden?

87
After
After
Left of traps
CC
2:52. See single *Atter* along. Then another
Then see a third single *Atter* supported 3 or 4 times, by
Whit-tail displaying. *Atter* song. *Atter* song. *Atter* song.
Also 9:2. See single *Atter* along. *Atter* song.
see song phrase while other phrases are silent.
See a single *Atter* alone.

Leaving 9:20.

It seems obvious that original mixed flocks are quite abundant
here - as usual.

Walking along new highway to Auto Service & Fuel station
this afternoon. Arrive first site 9500 ft. 3:30 p.m. *Atter* song along road.
Rather dry looking.

Lots of goldfinches!

Otherwise nothing.

Any other site 9300 ft. Scrub along small ravine.

See a single *Atter* alone.

Then a single Whit-tail. Alone. Probably same species as at Hono.
Or is it? Rufous crown, bordered black. Large diamond shaped yellow patch
around eyes. Black streak across cheek reaching bill. Otherwise yellow below.
I shall call this *IV*. Flycatching from tops of low bushes, about 6 ft above
ground. Uttering lots of their high-pitched CN's. Definitely quite alone.
(CORRECTION: See improved description in list of unidentified species)

Leaving 4:35 p.m.

Another area moderately dry scrub 10,075 ft 4:50.

See a single *Atter* alone.

Walk a little further along ledge.

5:42. Hear what sounds like *Atter* singing.

After

After

See another single thrush alone

How lovely. In air "type" song in distance

See a pair of refracta hopping thru low dense scrub. Apparently also

about 6:03 pm

Pair of thrushes alone. One of these birds (at least) looked as if it did not have a bright eye ring (I may also have seen a bird like this at Hono yesterday)

See a single Thrush in bush. Uttering lots of "Tuck" Notes, a few PN's. Alone. This across field. Not followed

See another single thrush. This one definitely with eye-ring

Leaving 6:23 pm

January 26, 1964
Atauro

This morning going to work along road below San Juan, i.e. the old road to Santo Domingo. Clear & moderately cold

Arrive first site 5:50 a.m. According to my altimeter this is 10,750 ft - but I am not sure that the altimeter is working correctly.

Absolutely no dawn song when we arrive.

A few thrush alarm calls 5:55.

Various other calls - apparently sub-sonic - a few seconds later.

First real dawn song. Apparently thrush 6:00 a.m.

Then a few more things going in. Nothing like DC yet.

No trace of Diglossina song yet 6:11 a.m.

Dawn chorus dying down @ 15 min

@ 15. Hear few birds. In usual song. Down & again "in usual phrases" not times preceded by low rattling phrases

After

See pair refringens moving & feeding in same scrub. Alone

Then see single Alou

They birds certainly are not howling & etc

@ 40. Come across a single Whitstart XIV in young up to 10 ft above ground. Song sounds viscous like it is up of the Wh but acts near Unduave. Also reminiscent of Lele. He bird is quite alone

See a single thrush alone

Blend

Alto @ 45. Come across a pair of the common Hebe, Br cauteris. Nowy uttering rattles. There is a pair of Whitstart XIV near them when I first see them. One of the Whitstarts goes up a long string of u-u-u. !! Then the Paulesterus move off in one direction, while the Whitstarts move off in the opposite direction. Whitstarts \rightarrow juv Alou or Lele. Two species apparently ignore one another. All this occurs in thick scrub, 5-10 ft above ground. Then the Whitstarts disappear. See Lele Rigens

C

See a pair of Al's feeding in same scrub a few minutes later. Alone. Move on and disappear almost immediately

7.05. See group of at least 4 refringens moving & feeding in bush. c. Close together. And remain together. They all seem to be in adult plumage, but may well be a family group. Lots of R's and then, high "focoooo" notes uttered from time to time. Sometimes as "greeting"

CC

See a single Al. Alone.

Leaving 7.15, to go lower

Arrive new site, 10,700 ft according to my altimeter. Moderately humid scrub area. Still partly in shade

Laf. When we go towards lake Laf. when I first arrive soon shuts up. There is a whole bunch of little red colored birds, plus one blue bird, possibly (?) diglossini, swimming about more or less together. Can't identify anything.

Laf. Then hear Laf again. Definite.


Laf. Then see single Laf. feeding alone. Silent.

Laf. Then see pair of Laf. fly into bush where *Catantopus* is perched. The latter moves away. One of the Laf. flies in opposite direction. The Laf. left behind begins to sing immediately.

Laf. Move on a little further down hill and hear lots of Laf. songs in the general neighborhood.

Laf. See one Laf. singing alone. It perched in bush 4 ft above ground. Most of song perfectly typical. But also includes loud, moderately long, descending and de-accelerating R's from time to time. These are very *Basileuterus* like. Usually, but not always, followed by brief pause in song. Could these be "unprinted" or *Basileuterus* (*Homo species*) ???

7:55. See another single through. Alone.

Hear what may be rufinucha song.  type

Then see a rufinucha bathing in pool. Songs continue - so

they cannot be uttered by another individual.

Meanwhile, the name of the "*Homo Basileuterus*" is megrocrastus.

8:05. Catch brief glimpse blue *Diglossa* in flight. Silent. Alone.

Cy. Apparently Cy. seems to have black mark.

Laf. Laf. singing not far away at same time. Then see three singing over L. Definitely alone.

There are a few *Eucalyptus* trees scattered among the scrub here. May

Cy
Laf help to explain why Cy come up to "Laf zone" here. Altho the Cy seen was flying from scrub to scrub at the time.

Everything very quiet now 8:30 a.m.

Laf ADDITION: I forgot to mention that one of the R's uttered by the singing Laf mentioned above was accompanied by a brief aerial sally, like a horizontal flycatching flight.

Cy 8:35. Back to area where first saw blue bird (with black of dull colored ones). Found Cy singing in tree about 10 ft above ground. Definitely identified as Cy. Crown not noticeably light, but eye red and with black facial mark. Song rather interesting. Preceded by 2-4 introductory notes. Main body of phrase very rapid, formless, twittering, & then. Bird alone.

Cy
Laf At first, when the Cy sang, there were no other D. glaucus singing in the same neighborhood. Then a Laf began to sing typical songs. Songs of two birds overlapped completely for a while. Then both shut up.

Cy
Laf A few minutes later, the Cy sang a few more phrases while the Laf remained silent. Then the Cy shut up. Then a different Laf began to sing in distance. Then the Cy uttered one more phrase, completely overlapping the Laf. Then the Cy shut up, the Laf continued singing.

Cy
Laf Cy moves about actively in low scrub, 2-10 ft above ground. Feeding on cup-shaped greenish-white flowers.

Cy
Laf Can't tell if Laf & Cy territories overlap. I think so.

Fog coming in 8:50 a.m.

Single Fork-bellied Flycatcher alone

Then see same bird in tree some minutes later. Still alone

See another single Fork-bellied alone 9:15 a.m.

Many of the birds are singing while other species are silent

It is interesting that mutual inhibition of song between Laf & Cy here, now, is much less than the common long inhibitions between Laf - Alter-CC and Alter-CC - Cy noted in previous years. If so, this might be due to a variety of factors. It might be a seasonal effect, and/or due to the fact that Laps are becoming used to Cys here (as yesterday's comments on Laf-Alter relations on Atacama). Or - perhaps more probably - it might be due to the fact that Cys have reached here only recently. (In this connection, it might be mentioned that all the Eucalypts around here seem to be young.) It may also be significant that the type of song uttered by Cys here (high, thin, rapid, & formless) is particularly strongly different from that of the Laps.

NOTE: One of the reasons why the Myioborus & Baulentornis observed near Hono never came together is that the former stuck to the trees while the latter stuck to scrub. It is possible that the Myioborus might have joined and/or followed the Baulentornis, if the two had ever occurred in the same environment. So it does not necessarily follow that the Myioborus of the Gen to region are fundamentally less gregarious than the Myioborus around La Paz. Possibly the Myioborus seen this morning were really "reacting positively" to the Baulentornis. The environment here is the kind where one might expect such reactions to occur - if ever.

Laf See a single Laf, alone, in area very near where Cy occurred. Rather surprisingly, I have not seen a single Alter or CC near the area where Cys were seen (altho both Alters & CC's certainly occur up hill). It looks almost as if Cys replace Alters & CC's in this particular (small) area.

9:50. One Laf singing while other species are silent. Perfectly typical song. No trace of R's. (This is certainly not the same bird that uttered R's earlier this morning.)

174
Leaving 10:15.

This afternoon walking along path - some Hoa An - in 200
and fairly clear. Some birds appear to be coming in in distance.

Almost nothing moving now.

4.12. See a lot of birds along the road but none seem to be
in movement later.

4.23 See a single myiarchus alone in low scrub.

Fog coming in 4.32

Leave and go down to outskirts of town till Arrive 5:23 p.m.

Driving down the car flushed 6 or 7 thrushes from a small stretch
of hedge. Looked almost as if they had been in a flock.

Raining gently 5:07.

Everything is unbelievably quiet here this afternoon.

See a single thrush fly by. Silent and alone.

A pair of thrushes fly by. Silent and alone.

See a single individual of what appears to be Psittacus in grove
area hopping thru hedge. Silent and alone.

See another single thrush fly by.

Leaving 6:00 p.m.

January 24, 1964
Hono

Arrive by village early 5:52 a.m. Still too dark to see anything.
Looks as if it is going to be another dark day! (What has happened to the
rainy season here ???)

No singing yet.

First song (possibly *Thryothorus*) 5:36

After
Hear 1st *Thryothorus* song 6:22. Almost certainly Ater. First few of these pronounced R components - usually subterminal. Later pronounced after first 4 or 5. Low to R.

6:26 Hear first *Aliphoes longicauda* song. Single high pitched, rather plaintive, song whistles, repeated quite rapidly one right after the other. "Seewoo seewoo seewoo" (The notes are not really pronouncedly long, but they are definitely lower towards the end than at the beginning.) This song is coming from direct or exactly the same site where I heard *longicauda* song a few years ago.

After
6:30 Lots of Ater song 6:12 a.m. Ater in scrub. Then Ater stops. Then a Cy sings phrase after phrase. All quite thin and formless. Preceded by approximately 4 accelerating preliminary notes.

"Tut tut tut tut tut" (End of each

After
6:35 phrase possibly something like "Eeyoo.") Then Cy falls silent.

So it looks as if the Ater-Cy inhibition were still working!

6:14 Hear first Grouse song in distance.

After
6:18 Ater singing again. Overlapping Grouse song. But Cy is silent. Then Ater shut up again.

See single *Thryothorus* perched alone.

6:20 Hear what may be *Basileuterus nigrocrissalis* song.

Dawn Chorus definitely weaker by 6:25 a.m.

See a single White-throat *IV* (*melanocorypha*) in scrub. Silent and alone.

See a single *Thryothorus* fly by, alone.

6:30. See a single *Thryothorus*. Apparently alone. In thick scrub.

is for a single *C. n. n. n.* feeding example. It is quite noisy. After a while it is probably also nothing. I find one other bird in the same area. It is a single bird, 10 ft away from the *C. n. n. n.* Also for long, in typical fashion. Both birds continue feeding for some minutes. In some general area. The Whitestart keeps and uttering with some apparent frequency. It is a second Whitestart, same species, in birds 20-30 ft away. It seems to be tending to approach the other two birds. Sing from time to time. Then the *P. n. n. n.* flies 30-40 ft away (also similar looking bird). Another Whitestart follows.

Hear first *D. n. n.* song 6:15 am

After

See single *A. n. n.* singing alone. No other *D. n. n.* visible at same time.

See single Whitestart singing alone (probably same bird seen singing earlier).

as CC

Come across *Cy* singing in tree. Its song phrases overlap completely with songs of 1 or 2 *CC*'s singing in trees and shrubs about 100 ft away. Then *Cy* shuts up. 1 *CC* utters a few more song phrases. Then shuts up. Then the *Cy* utters 1 more phrase. Then shuts up. 7:05

CC
Cy
CC

Now (or then) *CC* (s) definitely quite alone

trally

So it looks as if the *Cy*-*CC* inhibition has broken down per

It is interesting that these break-downs occur when at least one of the species involved is singing much less frequently than during the height of the breeding season. (I suppose that mutual inhibition of song is "necessary" at the height of the breeding season, but not "necessary" now.)

as CC

It is impossible to determine which species is responsible for the

Consideration of the number of individuals when overlaps of song occur.

CC 14:50 Another instance of song by CC's. Cy quite silent through-
out.

It may be significant that the species which seems to be overlapping
most frequently in this region now, Cy, is the one which is rarest in
the regions of Peru and Bolivia where I have worked.

14:16 See single Yellow Green-backed Hawk

cy 1 See 2 Cys flitting about in bushes and trees. Two or both birds seen
sing. No other songbirds audible at same time. No other birds near the
Cys.

alter 1 See single Alter alone
See single Firebelly alone

cy 1 Single Cy singing alone. Then CC in distance starts to sing. Come
CC partial overlap. Then 2 birds alternate songs. They continue for some min-
utes, sometimes alternating, sometimes partially overlapping. Then both
cy fall silent. Then Cy sing alone again.

CC 1 This looked almost as if the CC were singing in response to the

cy 1 alter 1 Cy 1 There are certainly Alters in the same general neighborhood as the
Cys and CC's here. But they have remained silent, or uttered only R-3s, while the latter species have sung.

cy 1 CC 1 Cy(s) start(s) to sing again. Again this seems to stimulate
the CC(s) Partial overlaps and alternations.

alter 1 14:30. See an apparent pair of Alters alone.

CC 1 CC singing while other songbirds are silent. Then another CC
begins to sing, in tree about 40 ft away. Complete overlap song of the 2
individuals. Then the second bird flies over to first. Supplants first seen

Equal times. Perforated bases. Between supplements, the Ovis egg more under ideal and "fluffed" hundred" picture common for

U



(Given = enough to use
if never stopped or not.)

as

See a single *g* alone and about in large

742 A single *P. h. h.* flies into a bush where there is a blue

(W) Diagonal (juv. Cy[✓]???) Lands about 20 ft away. No approach reaction between the 2 birds. When both fly off. No off-center turn.

CC

See a pair of *E.*'s moving through a clump of *Hypericum* in or at the
all white flowers. Above. One or both wings occasionally

CC

All the songs heard in the Quito region this trip have been twofold
vers. No triplets. None very distinctly divided into "Zucua".

AKM

See single letter preceding above


See part of ^Wfranchise feeding alone

After

See an adult and a juvenile (separate) often feeding together on red tubular flowers in scrub. In other species more closely.

cc

8:02 a.m. The same pair of CC ^W are before still feeding alone. Below



See next page

att

See single A to above

after

See adult and juvenile after feeding together again. Again no other

atm

See another story alone

See another by alone

See another ^VHubbell, above.

See group of B. superciliosus engaged in dispute. Very noisy. Utter-
ing SHN's, "long notes", and RN's (as today's notes on B. superciliosus)
Quite alone

cy See a single A. cyaneus again.
cy No further single A. cyaneus seen.
cy & 37. Come across a A. cyaneus (probably one of the birds heard
cy earlier this morning). No other A. cyaneus available

After See a single A. cyaneus alone
cy See a single A. cyaneus feeding alone on flowers of E. alberti. Then twice
cy attacks hummingbird (prob. M. calliope). Swings (without inter-
vening notes) after attack.

After See another single A. cyaneus alone
See another single A. cyaneus alone
Leaving 9:10 a.m.

As a result of my observations in the Quito region, it is obvious
that some of the species observed near Induavi, Bolivia, were really sho-
wing more than the "bare minimum" of inter-specific gregariousness. It is
possible that some of the differences in inter-specific gregariousness between
populations of the same species here and in Bolivia are due to the fact that
there are more flocks of a single species in Bolivia than here (i.e. that there are
more "attractions" in Bolivia than here). But not all these differences can
be explained in this way. The A. rufinucha here, for instance, do really
seem to be less attracted to individuals of other species than the A. rufinucha
near Induavi. There probably are similar differences between the
populations of Turdellus in the two areas. Probably the same is true of
the populations of M. melanocephalus and B. nigrocristatus

70

This afternoon working in area along new highway to Santa Rosa
nuevo and Jacayagual, same place as day before yesterday in afternoon. 15-44
from Santa.

Arrive 4:45 pm Everything very quiet

See a single C. House

See a single thrush alone. Again. Again. Again.

More and more single thrushes and peris alone. I will stop count-
ing them now).

5:20. See a single rufinucha alone & silent

See a single N. American warbler (possibly Bay Breast or Black poll
alone

Another single rufinucha flies by. Definitely alone
Leaving 6:17

January 28, 1964
Atacaso

Going to work at old spot, above San Juan, this morning.

Arrive 5:45 am. Cold & clear. Still dark.

Dawn chorus not started yet.

First sounds — thrush — heard 5:55 am.

6:12 am. There has been almost nothing in the way of a dawn
chorus so far. A few thrushes & claustrates uttering a few sounds — not
necessarily song

Almost dead quiet 6:25 am

6:31. See pair of rufinucha in scrub. Feeding on the same yellow-
greenish-white flowers (with red calyxes) favored by Diglossas !!! Apparent

(21)

by Cassin's Kingbird. Certainly probing into holes (presumably made by
Diploids) in the ground in places. Once one bird bites off whole flower and
another one. Both birds quite silent, and definitely alone.

6:45. See another single refumica alone.

14:22. Come across single A. torquatus in dense scrub. Hops closer
to look at me. Quite silent. With extreme (R, at least moderate) Hflf, and
very extreme Body-flapping. Does a little irregular Bowing, a few extreme
Lateral TF's. Then a LF appears. I look. Comes closer to me and even
down to the torquatus (8 birds only 3 ft apart at one point). LF appear-
ed to be curious about me and/or the torquatus. Then the torquatus gradu-
ally moves off in one direction. The LF flies in another direction.

14:44. See another single refumica alone.

14:50. Have seen several single thrushes alone here this morning.
All quite similar in appearance — but I am now becoming convinced that
there are at least 2 species involved. The last bird seen definitely did not
have an eye ring.

8:05. Come across pair of torquatus in scrub. Hidden but probably
alone. Utter jumble "seeeoooo" and "Whik-seeeoooo" notes. High
whistles, but with a definite hoarse quality. Certainly much hoarser than
notes heard yesterday.

Come across same birds again a few minutes later. Utter lots of hoar-
se "seeeoooo"s.

8:15. See a pair of thrushes alone. Without eye-ring.

See a single refumica alone.

See a single LF alone.

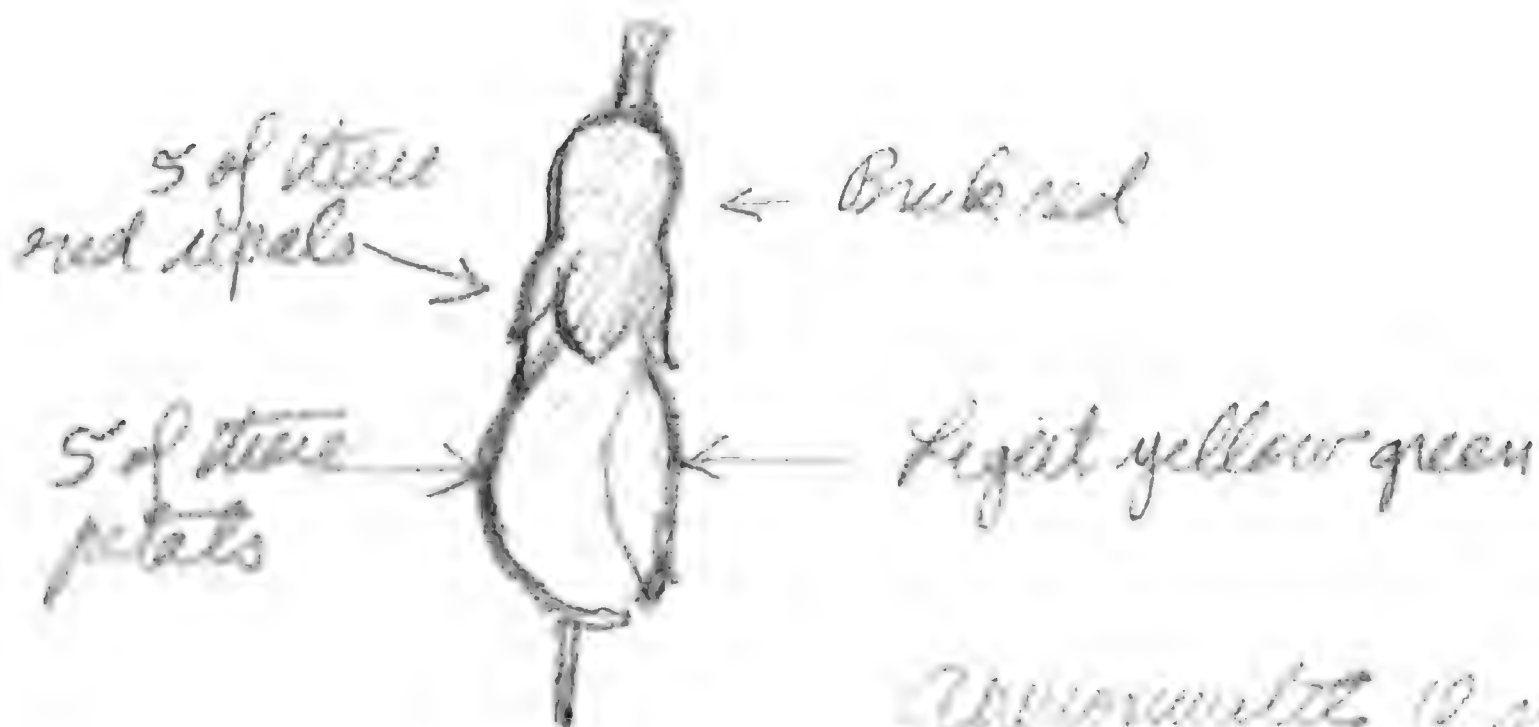
8:22. See another single thrush without eye ring. Is this the only
species up here ???

8:24 1st single rupancha, feeding on red & white fls. as Redstart.
 now bird was feeding on some flowers earlier. Definitely making holes (by
 rubbing) in sides of flowers. Then it took a piece off a lateral part of
 flower, held it in bill and nibbled it. I was a while. Quite silent. Eyes
above.

Flowers on it all to produce a yellowish 4-8 ft high with
 lots of small green leaves



Composite flower shown in



Approximately 12 shorter stamens
 around central pistil

The rupancha consistently made its holes near the base of the petals.
 Some of the flowers investigated had dead insects inside.

9:00 a.m. fee 2 thrushes together. One definitely with orange yll
 on eye ring, one definitely without. Otherwise birds appear to be identical
 same size, shape, & color of plumage, bill, & feet. I think that they must be the
 same species. Possibly differ in age and/or sex.

These birds were in the same patch of scrub as two Saps and 1 Atter.
 but the thrushes and honeycreepers seemed to ignore one another.

Leaving 9:20

Gen Note There is no doubt but that the faunas above and below
are quite different from one another. The lower fauna
is quite reminiscent of San Juan in some ways (e.g. the presence of Prinlester
as well as Hyperbaenus as well as Cy). The difference between the two faunas
seems to be rather large to be explained by altitude alone. It may be equally
significant that the lower area receives the sun immediately in the
morning while most of the upper area does not.

This afternoon going to work in a place called Pomangui —
where I saw the Atlapetes inopterus years ago. Arrived 4:04 p.m.
March 2 - bar

See a number of bonariensis around
for a single yellow-greenish g alone.
See a single bonariensis alone. It flew. Also perched, uttering

TW Notes 4:33 p.m.

CC See a single CC. Silent and alone.
See another CC. Apparently single & alone. Utters "secret" Notes
in flight. Scattered birds. Utters brief high Trill or R on landing. Then
flies on again.

5:04 See a pair of bonariensis (bright and dull) fly by. Alone

CC 5:30. See a single CC in willow. Since supplanted by Andean
Sparrow

Leaving 6:00 p.m.

Jan 27 1944
Alamosa

Going to work below San Juan today. Same place where Cys were seen a few days ago. Arrive 5:42 a.m. Dark and cold. Everything quite silent.

NOTE. Although I am calling this area "St. 15" - because it is so close to the area on Alamosa where I have worked before - it is probably actually a foot hill of Pacheco.

First bird sounds - thrushes in distance - heard 5:53 a.m. 6:00 a.m. Still dark. Something uttering "treet treet treet treet treet treet..." quite regularly. DC? Stops 6:03 (when thrush starts to sing loudly nearby).

6:06. Can hear rufous song. No R component.

6:07. Hear fairly "Ja auli" song. Also PN's. Some "Ja auli" phrases preceded by brief R phrases.

6:12. Quite a lot of rufous song.

Probably also tongues in distance.

Strong wind coming up 6:15.

6:17. See single fairly uttering "Ja auli" song. Alone. Exposed large perch in tree.

Song gradually stopping 6:23. Still haven't heard anything definitely dissonant.

6:30. See single fairly alone. And another.

6:38. See pair of rufous. Followed by a Laf for a second or so. But then Laf turns away and goes in another direction. rufous quite near.

4:14 See single torquatus alone

See plenty just now in 15

See single torquatus alone

Lab

Lab

See single torquatus & pair of torquatus feeding on same birds. torquatus

See single torquatus looking for us its torquatus disappears. torquatus but remains

4:26 See another pair of torquatus alone

4:30 Then torquatus alone

4:56 See a single torquatus alone

Going to walk down road.

Unbelievably still 8:17 a.m.

See a couple of torquatus alone again

Lab

8:40 See a single torquatus and a single torquatus feeding only a foot or so

apart. Both silent. Left one of torquatus does not follow

Leaving 9:10

This afternoon, working along path above Hono. SEE TODAY'S

NOTES ON MIXED DIGLOSSINI

After

4:20 p.m. See an After alone. Then another.

Then see a single torquatus alone

Then see pair of torquatus alone & silent

4:44. A pair of torquatus lands in a tree, where a cyanocephala

is already perched. One of the torquatus twice supplants and chases the

cyanocephala. The attacks are accompanied by brief "rattling rasps" (at least certainly uttered by the torquatus). The torquatus around here certainly

do not appear to be "friendly."

Leaving 5:00 p.m.

July 30, 1967
Hono

Going to work along path above I saw this morning. Arrive
very early, 5:30 a.m. Clear

Hear first ocean sounds - non-stop - 5:55 a.m.

Dawn Chorus in full swing 6:02. Largely Thrush

Lots of single Thrushes around (I will not comment to them in
wordlessly unless there is something particularly interesting about them.)

6:15 Hear first refranchia song. T-R component

Everything very quiet now 6:30

6:35. Hear first frankly songs "Ja-ah" & accelerating alto
rattles (loud rattles, possibly not the same as the rattles preceding some
"Ja-ah" phrases)

Star

Several views of Ater's alone

See a single frankly singing alone

6:42. See a single refranchia alone

Cy

7:01. See a single Cy alone. Also see another frankly alone

Ater

See another single Ater singing alone

US

See a single Cy feeding on flowers of Eucalypt. Several humming birds

near by, but the different species seem to be ignoring one another.

8:42 a.m. During most of the last hour and a half, I have been

concentrating on reactions between Cys and Ater's (SEE TODAY'S NOTES ON
MIXED DIGLOSSINI). In the course of this - out of the corners of my eye

- I have seen an appreciable number (4 or 5) of both refranchia and frankly
in billies. Always alone.

8:46. See a single torquatus alone.

February 13

GENERAL REMARKS. I have been both pleased and somewhat surprised to find the tanagers and finches here behaving now in the same way as on previous visits.

Mixed flocks are so rare here that the different species may be avoiding one another because of special aversions.

SUM TOTAL ALL OBSERVATIONS = 36 hrs 00 min

Observations in and around Quito,
and in cleared or agricultural areas
(i.e. where mixed flocks would not
be expected to occur) = 8 hrs 00 min

Time spent in areas which
looked suitable for flocks = 28 hrs 00 min

Time spent in areas in
which highly organized flocks
are known to occur = 0 hrs 00 min

Jan. 24, 25, 26, 27, 28, 29, 31

Inds. Alone

(239) + 124

Inds. in Flocks

|||| |
|||

(30)

No. Flocks

|||| |

(11) + 5

No. Organized Flocks

(0)

Largest No. Inds. in Flocks

(4)

Species in Flocks

2
2
3
2
2
2
2
2
2
2
2

(23)

2
2
2
2
2

Central Ecuador

78

2572 = 917' 15"

March 5, 1966
Road to Papallacta
(East of Quito)

Get out on road. It naturally goes P.p., go over crest of ridge (p.p.) and start down. Reach first patch of AS. in morning 7:25 a.m. 12,400 ft. Vegetation is not very lush. No obvious flowers.

Sky partly cloudy. Little wind.

Everything very quiet.

See several Sooty Thrushes above.

Going further down 7:34. Reach another patch AS 7:43. Same AS apparently another. Other not so good growth 12,050 ft. A few small seeds & table.

See some *Atanapha*-type finches above. 3-4 ft up in scrub. There are some red tubular flowers around here.

Also see some of the big, uncolored, *Phrygilus* above.

Everything very quiet (again) 7:55. Apparently, this is not the breeding season.

Another single Sooty Thrush above.

Aha!!! 8:00 a.m. Hylite down road. Region of slightly denser and taller AS. See definite mixed flock!!! Includes 2 or 3 CC's (probably largely gray on breast). And 2 or 3 larger black and white birds. Apparently *Urothraupis*!!! Birds quite close together (usually within 3-6 ft of one another) and stay together at least 5 minutes. Once Black and White f ———> CC. Then CC, CC f ———> Black and White. All birds very quiet. Only

occasional CN's All birds 2-4 ft. probing insects off trees. It's also probing in dead ferns & herbs. All birds ranging 2 ft - 8 ft above ground.

Group gradually disappears — without my being able to see where it went. Probably up hill.

8:27. Going back up road. Catch brief glimpse of single hummingbird which may be *A. fuscus*. Alone.

Then see a single *Finchella*. Silent and alone.

Leaving 8:37.

See another over 11,200 ft 8:48. Area of scrub scattered in pasture. Quiet.

8:50. Hear what may be Laf or warbler song in distance. Then see more single sooty thrushes alone. Then more Laf-type songs NODWA.

Then catch glimpse single White-bearded Flycatcher. Silent. 2 ft up in dead scrub. Probably alone. But there are some small birds (unidentified) in scrub, not too far away across road.

Everything is very skulking around here now!

I can hear some *Psaltriparus* which sound like *Basilornis inornatus*, but I can't see the birds.

Another single sooty thrush alone 9:13 a.m.

Leaving 9:23 a.m.

9:30. Down by Laguna de Papallacta. 10,800 ft. More scrub intermingled with pasture.

Hear more Laf-like songs NODWA. Then see birds uttering them. Two *whistlers*. Usual species for the region (*melanocorypha*). Rufous crowns. Yellow spectacles. Sound crickets.

like the "White-spurred" etc. from Northern Andes. Obviously no response. Flying from limb to limb across pasture. 2-20 ft up. Only along part of the time. But there are some other birds. A more general area I hear various little flycatchers with the occasional crests, a green heron, etc. And some of these other birds do fly into same as the Whitestarts. But they might be "cousins".

9:45. A little further along road. See single B. Kingbird after. 6-10 ft up in bush. "Chattering" loud. "Tut" notes. Definitely alone.

Further along road. Hear more Whitestart song. HODWA. Then see single Whitestart fly from tree to tree. Apparently alone.

Then see pair of hummingbirds (like XIII on Paracé) feeding in bushes 3 ft up. Then see single rufous hummingbird (XVI) feeding on red and white flowers 20 ft away. I think I have seen XVI feeding on same species of flower before. Then XVI flies away. Then I hear a few Atter song phrases (with R) nearby, without being able to see the bird.

Leaving 10:15 a.m.

COMMENTS: The vegetation of the areas visited today does not look very, very burned. Doesn't look as burned as the vegetation of some parts of Atacazo and Pichincha. But this appearance may be somewhat misleading. The whole region has been greatly affected by human activities. Both cutting of trees and grazing of cattle.

In general, this area looks rather like Paramo La Negra in the Sierra de Minda and the drier side of Paracé in the

Central Cordillera of Colombia

I was struck, however, by the apparently extreme variety of birds here this morning. It is probably another example of appearances being deceptive. (Probably the birds were only birds.)

March 2, 1962
Finca de Sapulveda

Going to start work in the last place visited yesterday.

Arrive 6:25 a.m. Cloudy. Cool

See plenty of single sooty Thrushes alone along road down here

Everything very quiet in general, except for miscellaneous thrush noises (not songs).

6:27. Three single Sooty Thrushes alone. Also some wren songs. (This might conceivably be the same species that uttered Diglossa-like songs on Purace.)

Wren shuts up. Then hear presumed Atter songs in distance. NODWA. Then Atter shuts up. A little further along, hear more Diglossa song. Cy? NODWA. Bird shuts up. Hear brief whistle. Whites tail song. NODWA. Whitetail shuts up.

6:33. See single C. Silent and alone. Feeding 2 ft up in bush in pasture.

Then see single Altagates pallidiviridis (definite) !!! 6"-2' up in scrub along road. Uttering CN's. Also definitely alone.

6:42. Various small hummingbirds fighting among themselves.

Then some more Diglossa-like twitters in distance. NODWA

Then some Atlapetes-type Whistle songs. NODWA

Then more Whistertant songs. NODWA

Lots more hummingbirds fighting

6:49. See single Whistertant alone. Silent. Feeding 12 ft up in tree. In usual way. Then, 20 ft down road, see another Perched 12 ft up. Singing. NODWA. Alone. Shuts up. Flies off.

See pair of Firebellies flying from tree to tree. Singing occasionally. Definitely alone.

Then more Whistertant song in distance. NODWA. Shuts up.

Laf Then Laf begins to sing. Perched exposed 3 ft up in bush. More like NODWA. Definitely alone. Shuts up.

Immediately, Whistertant begins to sing again. NODWA. Two Whistertants moving thru bushes (30 ft away from where Laf sang) 6 ft up. Definitely alone.

Laf Whistertants shut up. And Laf sings in distance!

Laf 7:08. Further down road. Laf sings. NODWA. Shuts up. Whistertant song. NODWA

More Sooty Thrushes alone

Then see pair Firebellies. Low in bushes of sparse second growth scrub. Laf appears in bush. 20-30 ft away. One Firebelly. Laf → Laf! Laf flies away immediately. Firebelly does not follow.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

8:00 a.m. Everything quiet now.

Laf 8:11 Lafs singing again. NODWA

Then see a single Firebird, fly by. Silent and alone.

8:22. Walking along path above road. See pair of CC. Look up in bushes, 2-6 ft up. Apparently alone. Since one supports the other. Silent both times.

A few minutes later see single CC perched high in one of the bushes visited by CC a while ago. Apparently alone. Then see 1 White head clearing another. Both fly away. Getting yellow.

There is a small flock of Catamnia-type finches (5 or 6 with light bills, dark on face, otherwise gray except for rufous under tail) moving along edge of scrub here. Nothing else seems to be paying any attention to them.

I can hear a lot of Basileuterus-type Rattle-fleas around here. (As usual) without being able to see the birds.

8:41. Again see pair of CC's. Silent and alone.

8:47. Larks still singing occasionally. NODWA

Leaving here 9:00 a.m.

Go on down to another site 10,425 ft. Some miscellaneous scrub here.

Hear Atlapetes "Greetings". Also Basileuterus Rattle-fleas. Not overlapping.

9:52. A little further down road. 10,400 ft. Hear Atlapetes type whistles and Whitethroats song coming from same patch second growth scrub. Then both species about up. Then see pair CC's other side of road. Utter Twitters. NODWA. Then they fly in general direction of scrub where Atlapetes & Whitethroats were heard earlier. Disappear.

Ch. This may have been a diffuse flock. If so, CC's were following. A few minutes later, see single Whitetail feeding in same spot. Up again. And now apparently alone.

A few ft further on, see single Whitetail feeding in same spot. Down again. Definitely alone.

9:45 a.m. Follow road down hill. Only a few yards below road, come across definite mixed flock. In region of very mixed tall scrub and woods. Very lush. Large mixed growth. With some probably native AS trees mixed in. Flock includes 2 Whitestripes, 1 Whitetail, 2 Firebellies. Quite diffuse. Birds moderately noisy. Whitestripes and Whitetail ranging 3-20 ft up. Firebellies ranging 15-20 ft up. Can't tell who, if anyone, is leading.

NOTE. This vegetation looks as if it should occur 1000 ft lower than it actually does.

Firebellies fly far away. 9:55. Nothing else follows. Whitestripes and Whitetail gradually move up hill. Staying close together. Whitetail probably following — Whitestripes. Leaving 10:00 a.m.

March 17, 1966
Road to Papallacta

Going to work below the lake today, just above the town of Papallacta itself. I.E. The same area where I worked just before 10:00 a.m. yesterday.

Arrive 6:12 a.m. Just getting light. Cloudy. Cool. Everything very quiet.

Hear first Lofer Whitestart song phrase 6:14.
Then another Apparently Whitestart NODWA. Then a whole series
of phrases. Still NODWA. Then Whitestart begins alternate with
Baudouin-type Rattle flourishes 6:21. Then both species
shut up.

Then what sounds like a complete Atlapetes White song
(only 2 notes per phrase) 6:22 NODWA. Atlapetes shuts up, White-
start starts again. NODWA. Then Atlapetes starts again. Several
complete overlaps with Whitestart song. But the birds and the White-
start are at least 100 ft apart at the time.

Whitestart shuts up. Presumed Atlapetes continues. NODWA
6:28. A little further up road, hear 3 note songs which
probably also are Atlapetes. Also NODWA. (This does not sound
like the rufinucha song I remember. And 2 notes of each
phrase and with conspicuous "snaps". Isittes pallasianus?)

See a single sooty Thryothorus alone.

See a single B. nigrocristatus alone. 2 ft up in second growth
scrub edge road.

Presumed Atlapetes has shut up now. And then I hear
Twitter up hill! NODWA. Sound like Cy phrases without Intro
Notes! Then bird shuts up.

6:40. See single Dubusia. Silent. Definitely alone.
2 ft up in second growth scrub. Flees away immediately.

Twitter up road, hear more Whitestart song. NODWA.
Then Rattle-flourish. Complete overlap. Whitestart shuts up.
Rattle-flourishes continue. Shut up. Whitestart begins again.
NODWA. This is almost exactly same place where Whitestripe - White

stant - Jumbly flock was seen yesterday! I wouldn't be surp-
rised if it's a pretty same group here now.

Aha! A pair of Jumbly 10-12 ft up in scrub. And
also see single Whitstart 30 ft up in tree, 20 ft away from Jumbly
Whitstart singing NOBWA. Then hear more Rattle-
flourishes low in scrub, also about 20 ft from Jumbly.
This is definitely a mixed flock. And certainly partly or wholly the
same as the flock seen here yesterday.

Jumbly fly away. Whitstart follows.
Whitstart moves gradually uphill. And the birds ut-
tering Rattle flourish def. tot. f → Whitstart (while
now moving low in scrub.)

Whitstart songs and Rattle-flourishes sometimes overla-
ping, sometimes alternating.

Then I see a single B. superciliosus f → group
3 ft up in scrub. So I don't know if the birds heard uttering
Rattle-flourishes earlier are Whitstart or (other) superciliosus.

Whitstart stops singing. Immediately, I hear Diglossini
Twitter in distance (perhaps 100 ft away). NOBWA. Then stops.

Jumbly reform → group. Then fly away ag-
ain. Whitstart follows.

Then a pair of gallinula appears. Moving low thru
scrub edge road. 2-6 ft up. Utter occasional "Greetings".
The gallinula pass right by the flock (perhaps 15-30 ft awa-
y) without hesitating for a moment. I & they certainly did not
join the flock, even temporarily.

Flock is quite stationary. Or, rather, making irregular

curious movements

I am going to walk back down road 7:32 am

See a single Fidellia fly alone

Passing area where Cy. Vire. further were heard earlier
I find that they are still continuing still not over. And ind. is
invisible.

Then, passing area where Altopeter 3-note songs were
heard earlier, I hear more songs of exactly the same type further down
on hill. Most of these are NODWA. But some are completely overlapp-
ed by Whitstart songs. But Whitstart and Altopeter are very
far apart at the time.

Then hear more Whitstart songs down road NODWA

Things are getting quieter now - 7:19 am

See a single Scoty Thrush alone

Back to flock area 7:40. Sounds as if Whitstart and
Brachyotus Hemipongus-types have moved slightly down hill.
Still noisy but out of sight. But I do see pair of Fidellia by
road. At least 100 ft from the other birds, but probably still (cor-
rel) associated with them.

Then see single Whitstart. Probably the ind. with flock
Only very brief glimpse. Ind. is flitting about, 2-6 ft up, well
within scrub. Silent. Disappears

by? Then I hear a few Daglossine Twitters (Cy ???) coming
from the immediate vicinity !!!

8:02. Going down road. Hear more Altopeter 3-
note Whistle songs. NODWA

See a single Whitstart 6 ft up in scrub. Silent. Disap-

Atty alone

[illegible]

7. 11. 1948 8. 00 am. See page 92 Altapetes

[illegible]

Follow Pz's at first. A few seconds later, I see a single Trachely-
apt up in moving. Effect from Pz's disappears. Pz's continue
up moving their heads. Gradually up hill. Then a single CC j.

→ PL's Definite Landing a few inches from the PL's.
6 ft up CC probes under flower heads. PL's continue
moving CC f → PL's. When B. macrostictus f →

group repeatedly. Then I see a pair of wrens in scrub. 4 ft up.
Wrens almost certainly same species as on Purace! Wrens b —

→ group. Then a pair of Towhees (4) appears. Flitting about erratically. Then. Both join and leave other birds repeatedly. Sometimes in front, sometimes in back, sometimes at sides of other birds. Then I see single Whitestart 50 ft up hill. Possibly locally associated with group.

The whole assemblage gradually moves up till Pr's def
ately the nucleus (altho not always leading). Apart from this,
group does not appear to be highly organized. Inds sometimes close
together. Sometimes very far apart.

Gradually disappears from view ca 8.25-8.30.

COMMENT: It is obvious that real mixed flocks are regular in the region. But they do seem to be comparatively rare.

small, and simple

Presumably the principal difference between this region and the Quetz-Pichincha-Alacran region is that there are nuclear species (e.g. *Whitethroated Warbler*, etc.) here but not further west. But why are the nuclear species apparently confined to this region?

NOTE: According to all my local informants, it is the rainy season here now. But actually, I have been lucky so far. There has been no rain so far during my periods of observation on this side of the mountain.

Going back up road, 8.45 a.m. Hear 2 Whitethroat songs. NODWA. Shuts up. Then hear more *Atlapetes* Warbler song. NODWA. Shuts up. Then more Whitethroat song. NODWA. Shuts up.

Then see a single *Trochilops*. Silent and alone. Low in some b edge road. 2-4 ft up. Flies away.

Sun is coming out 8.50 a.m.

See another single *Sooty Thrush* alone. And then another.

Going down same side path as yesterday 9.06 a.m.

Hear more Whitethroat song. NODWA

10,250 ft Hear still more Whitethroat song. NODWA. Shuts up. Then hear Rattle-flourishes. This probably is first flock again. Now Whitethroat song and Rattle-flourishes are alternating without overlaps. Then shut up.

Then I hear brief but unmistakable *Lo* song in distance. NODWA (or Rattle-flourishes).

Some distance further on, come across pair of *Ruddy Gnatcatchers*. *Gnatcatcher* 6-10 ft up. Many. Lots of R's. Alone except

Eusiphia

for a single Eusiphia sitting quietly 15 ft away. Is this as
 neutral as possible? In any case, Eusiphia disappears from view.
 Then single Whitstart shows up, 20 ft away 20 ft up in
 trees. I can also hear Forficulidae in distance behind Whitstart.
 Is the old Forficulidae showing up again? Yes! I can also hear Basileuterus
terrestris or Forficulidae coming up behind Whitstart.

But, unfortunately, they go around me, in such a way without
 my being able to see them.

I have to start up hill again 7:35 am.

A few ft on, come across what may be partly some Forficulidae 6 or
 7 Forficulidae and other small birds in the tops. Unidentifiable. Also
 1 very large dark bird with banded wings!

Also hear Whitstart singing close by. Must be members of
 flock. Also hear Forficulidae. Also must be in flock. (Actually, there
 must be two Forficulidae here.)

Flock going up hill with me. See one of the Forficulidae.
 8 ft up in small tree.

This flock is quite diffuse now.

Leaving 10:00 am

NOTE: It is very remarkable that I have not seen a
single Forficulidae or dentrochlopted here. This is another indica-
 tion that mixed flocks cannot be very common here.

March 8, 1966
 Road to Papallacta

I am going to work above Pifo today, on western slope

of the mountains, where Laf and C were seen the day before yesterday. Arrive 8:59 a.m. Still quite dark. Clear.

SEE TODAY'S NOTES ON MIXED DIGLOSSINI

6:45. See a single Sooty Thrush alone.

NOTE: I have heard frankly records around here without seeing the birds. Also some records which might be the bonariensis. Again without seeing the bird(s).

7:33. See a single Atlapetes. Definitely rufinucha. Moving thru scrub, 2 ft up. Silent. Definitely alone.

Also see some more Sooty Thrushes alone.

8:15. See a single Yellow-greenish fly leg. Silent & alone. Also see more Sooty Thrushes alone.

COMMENTS: There is no doubt but that the fauna here, on the western side of the Eastern Sierra, is more like that of the Quito - Pichincha - Atacaso region than like that of the eastern slope of the Eastern Sierra. This probably is what should have been expected.

What does surprise me, however, is the extreme rarity of tanagers here and, to a lesser extent, in the Quito - Pichincha - Atacaso region. Certainly a lot more tanagers would be found in similar-looking environments in Colombia, Venezuela, and Bolivia.

Is the rarity of tanagers here "simple" due to the fact that there is no good "upper sub-tropical forest" nearby? I.E. do the tanager species need "VSTF" as "refuges" when conditions become unfavorable — in spite of the fact that they can occupy other environments when conditions

are more favorable ?????

March 9, 1966
Road to Papallacta

Going to work in same place as yesterday morning. Arrive 6:09 a.m. Just starting to get light. Maroon is clear. See a number of sooty flycatchers alone. Both singles and pairs.

7:36. See a group of at least 3 maroon-crested cotingas in small trees in distance. Apparently alone.

Then hear some Forked-bills in distance.

7:54. See single Forked-bill perch 20 ft up top tree. Silent and definitely alone.

7:59. Hear some bonariensis vocalizations.

A few minutes later, hear unmistakable Duloria in distance. So there are some tanagers here!

8:47. A group of 5 bonariensis fly by, overhead. Silent. Definitely alone.

8:57. A couple more bonariensis fly by. Also silent and definitely alone.

Then see pair of rufinucha. Moving thru region of thick but very low scrub: 6" - 3' up. Utter occasional soft "CN"s but otherwise quiet. With CR. Quite conspicuous. But definitely alone.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

March 10, 1966
Atacuso

Go down Old Road to Santa Domingo. Park at 10,700 ft at 5:55 a.m. Still quite dark. There is a light but steady rain. Everything quiet.

A very few faint miscellaneous birds sounds ca 6:08. Then a few more ca 6:15 a.m. Thrushes etc.

Rain is almost stopped now.

This is a region of rather scattered miscellaneous scrub and pasture.

Alto? Hear a few R's which might conceivably be Abes!

Hear first Atlapetes Whistle songs ca 6:18. NODWAH.

Then some Furbellies sounds completely overlapped by the Atlapetes. Again and again.

Atlapetes shut up. Furbellies continue. Then something begins Rattle-flourishes ("Rfl"s). Rfl's and Furbellies sounds apparently overlapping at random.

It is still quite dark 6:22. Cloud cover is very thick and very low.

Walking along road, hear another Atlapetes uttering Whistle songs. NODWAH. But overlapping Furbellies and Rfl's in distance apparently completely at random.

Light rain starting again 6:25 a.m.

Walking back along road hear lots of Rfl's, Furbellies sounds, and Atlapetes Whistle songs. All apparently overlapping completely at random.

I think that all 3 species probably are in breeding condition

See some single sooty Thrushes alone.

There is a lot of bamboo around here. Area obviously is very humid. Soils were humid than areas above Papalluta.

Atlapetes songs continuing full blast 6:36. NODWAH. All other species becoming more quiet too.

Atlapetes shut up. Hear single Diglossini Twitter in distance. NODWAH. Then there is more Atlapetes song. NODWAH.

6:40. Laf sings one brief phrase. Completely overlapping several Atlapetes songs.

6:43. See single Atlapetes moving thru scrub, 2 ft up. Definite refumucha. Definitely alone.

Then see another Atlapetes singing downhill. Exposed 3 ft up. Definitely also refumucha and also alone.

Another Laf sings far downhill. Again completely overlapping Atlapetes Whistle songs.

NOTE: All the scrub here is more or less low. Probably largely second growth. Certainly not "Upper sub-tropical forest".

Walking further along road, hear another Laf singing uphill. NODWAH. Then a second Laf also sings. Two inds. apparently overlapping at random. 6:50. Also completely overlapping Rfl's.

Rain almost stopped again.

Further down road, hear more Atlapetes songs. NODWAH.

Then see single Firebelly. Perched 10 ft up. Silent. And definitely alone.

Also see more sooty Thrushes alone.

Atlapetes shut up. Laf sings downhill. NODWAH. Shut up. Atlapetes resume. NODWAH. Overlapping when songs apparently at random.

6:58. See another rufinucha. Definitely alone. Uttering "CN"
3" up in hedge by side of road. Flies off and joins mate in scrub
across road. Both hop thru scrub 6" - 3' above ground. Uttering
lots of "PN"s and twittering. Quietly. Both still definitely alone.
Laf Then hear Laf song. NODWAH. Partially overlapping wren
songs.

Then Laf shuts up. Hear Diglossini Twitter down hill. Probably
Cy or CC. NODWAH. Shuts up. Laf resumes NODWAH.

NOTE: I find that there are some medium sized trees here. In
the hammocks. Probably second growth.

7:12. More Laf song. NODWAH.
Walking back up road, see 3 Atlapetes rufinucha feeding tog-
ether on ground. Two of these probably are "pair" I saw earlier. Quiet
now. Definitely alone.

A little further on, hear another Atlapetes uttering Whistle song.
NODWAH. Shuts up.

Further on, hear Dubonia singing in distance.

Then see another pair of rufinuchas feeding in very low scrub
along side of road. Definitely alone.

7:21. More Laf song in distance. NODWAH.

Further on, see a single rufinucha. Silent and definitely
alone. Feeding in scrub 1' - 4' up.

Then see a single Eusifera perched 10 ft up in small Euca-
lypt. Silent. Alone. Flies off immediately.

7:33. See a single CC (Now or less all buffy underneath).
Feeding on small cup shaped yellow flowers in bushes. 1' - 3' up. Utters
occasional "CN". Definitely alone.

Rain starting again.

Then Laf song. NODWAN.

2. Clusters up road, hear Laf song and flight displays.
 Laf song is at least near where Laf song earlier this morning.
 But I can't do the NODWAN now.

Then we leaving area. Perched 10 ft up in small Eucalypt.
 More 2 distinct species.

Then we saw 2 families, a 5 ft up in mixed scrub and Eucalypt.
 One hitting, 1's. departing down.

Leaving this area 7:50 a.m.

Just as I start to go, I see a peculiar "group" some distance
 uphill. One or more Empidonax (s) moving thru scrub edge pasture
 in 1'-4' up. There also is a pair of Geothlypis (same pair seen a
 few minutes later) moving more or less parallel with the Empidonax
 But about 20-30 ft uphill. And there is a single EC feeding in
 bushes about 20-30 ft behind Empidonax. All birds quiet.

There also are 2 or 3 small grayish birds in same general area.
 Probably finches or flycatchers.

"Group" disappears from view almost immediately.

This might, conceivably, have been a "real", "organized"
 flock. But, if so, it was remarkably diffuse.

Leaving (again) 7:58 a.m.

Go on down to area 10, 325 ft. Region of very mixed wood
 growth scrub. Lots of bamboo. Quite lush. Arrive 8:07.

Everything very quiet.

Walking up road, hear more Laf song. NODWAN.

Then single Laf flies by. Alone.

Well! Well! Well! 8:08 a.m. See real definite mixed flock.

In thick scrub uphill. Includes 3 Sittas, 2 Myiobuteo, 2 Mang.

anvers and 1 or 2 White-bellied Flycatchers.

Mangrove is the "usual" species. Same species seen near
Hudon and elsewhere in Andes.

Whitestripe is quite small. Presumably Bendicentus. A part of crown and cheek patch really quite dark.

All birds moving thru scrub - 2-6 ft up. Progressing very rapidly. Quite coherent. Most inds. usually 1'-12' apart. Tittering lots of "ch" but little else.

Leadership definitely changing. Once Mangrove definitely in lead. Once White-beard(s) definitely in lead. Littles possibly in lead at other times.

Both Littles and Whitestripes definitely picking insects off leaves.

Once, two Littles try to land on same perch. A dispute breaks out. Accompanied by long, loud R.

When flock was first seen, there was one rufinucha in it. Silent. 2 ft up. In rear of group. But this rufinucha definitely did not follow the flock in its progression. I.E. the association of the rufinucha with the other birds apparently was "purely" casual!!!

Interestingly enough, there also was a pair of Forbellus about 50-75 ft from the flock at one time. And these Forbellus made no attempt to join or follow the group.

Flock has disappeared by 8:20 a.m.

Laps still singing occasionally 8:37. NODWAH

Walking down road 9:15 a.m. 10,050 ft. See single rufinucha. Silent. 25 ft up in tree. There also is a flycatcher lower down in same tree. From the sound, a White beard. Then flycatcher flies away. rufinucha does not follow.

A few minutes later, no rustica 10 ft up in a different tree. Same individual. Definitely alone now.

Very quiet 9:23

Then there is another outbreak of Sof song. NODWAH. But this Sof does overlap Rf not very far away. Then Sof shuts up. See some more Sof Howlers alone.

Then we reach Cochlea flycatcher carrying n.m.!

Alas! 9:28 Suddenly catch glimpses of 2 or 3 Butorampus impudicus. I could not see them from underneath. But I am almost 100% certain that they were the Big species. Very active and very noisy. Incredibly conspicuous. Uttering lots of loud, plaintive, whistle-like, harsh, whistles. Small, doublets and triplets.

"Zheee-zheee" and "Zheee-zheee zheee." One bird sounds beside another. Postures. Elaborate Bill-ups. Then, apparently feeds the other. These birds definitely are quite alone. Fly off after a few minutes and disappear.

9:44 Going back up road. See a single rustica 10 ft up in scrub. Definitely alone.

9:52 10, 225 ft. Come across mixed flock which obviously is partly the same as the one seen earlier. Includes 2 or 3 Sittis, 2 Margarornis, 2 Whitestrupes, also two Trochilurus. And at least one CC. All birds moving thru scrub 4-6 ft up. All uttering CN's. Whitestrupes also uttering R's. Trochilurus also utter "Ta-ah" song.

Sittis apparently in lead. Whitestrupes definitely bringing up the rear. CC f → Sittis. Trochilurus f → group repeatedly. Margarornis f → group repeatedly. Whitestrupes f → group repeatedly.

Leaf jumps furiously nearby. But apparently does not follow group.

Group moves down hill. But then the Whitestripes come up hill again! Apparently they have become separated from Sittie-Margarornis group! But then I see that the Whitestripes are accompanied by a single individual bird which is one of those black, white, and pale yellow marabou-like birds which I have never been able to identify! And then suddenly the rest of the group reappears - Sitties, CC, Tumbellies, Margarornis. And one White-headed New-whole group continues up hill.

Now Whitestripes are definitely in lead. Sitties follow - Whitestripes repeatedly. All other species follow group repeatedly. White-headed heron up the rear.

As far as I can tell, the CC is not associating particularly closely with the Sitties. But it certainly is picking insects off leaves in exactly the same way in exactly the same places.

Group is very coherent as it goes up hill. Soon disappears from sight.

Leaving 10:15 a.m.

COMMENTS: It is obvious that mixed flocks occur on both the eastern and western "frontiers" of the humid temperate zone in Central Ecuador.

But their distribution is very narrow. Why?

I might add that the vegetation at the area worked today (which I shall call "below San Juan"), and at the areas near Papallacta, does not look more suitable, now, for mixed flocks than other areas such as Nono and the higher parts of Atacaso.

Before seeing the flock today, I was beginning to think that mixed flocks occur only in "Upper Subtropical Forest" and some adjacent to such forest. This may be largely correct. But the statement probably should be re-formulated. Mixed flocks certainly occur in areas where "Upper Subtropical Forest" occurred recently, but from which it has disappeared completely in the last few years or decades.

(Probably, I have never worked in mature VSTF except in the Western and Central Cordilleras of Colombia.)

The occurrence of mixed flocks on "frontiers" in this region does not necessarily invalidate my major thesis. The flocks seen so far have been rarer, simpler, and smaller than the flocks seen in Bolivia or the Western and Central Cordilleras of Colombia — or even the Eastern Cordillera of Colombia. (And note that the vegetation around Bogotá and Quasica certainly is not virgin, and not even "real" forest!!!!)

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

March 11, 1966
Atacaso

Going to work below San Juan again. Where mixed flock was seen yesterday. Arrive 5:53 am. Just starting to get light. Sky partly cloudy. Everything silent.

First bird sounds heard 6:02 am. Through "CN"s and "Al CN"s. Then there is silence again (in spite of the fact that it is already quite light).

Then some miscellaneous songs (species unknown) 6:07

Quite a lot of song by 6:12 a.m.

See first *Turdellus* a 13. Perched upward 15 ft up in tree. Singing. Definitely alone.

6:28. Walking down road. See a pair of *Turdellus*. Moving through scrub, 6-10 ft up. Quiet. Definitely alone.

6:34. See single C. Silent and definitely alone. Pecking once to off-leaves in scrub 8-10 ft up.

6:42. See single hummingbird XVII. Sitting quietly 8 ft up in scrub. Definitely alone.

Will! Will! Will! 6:50 a.m. Come across a pair of streaked flycatchers. Apparently *Thryothorus* (i.e. XXXXT)!! Sitting about in trees and scrub, 6-12 ft up. Very active, but not making any progress in any particular direction. Also very, very noisy. Lots of R's and many other sounds.

Then a single Cy (definite - adult) flies by silently. Makes no attempt to join the flycatchers. Lands 30 ft away. Feeds on tubular red flowers. Disappears.

A few minutes later, pair of CC's ^{W.V.} j' \longrightarrow XXXXT. CC's silent. And apparently fly off again immediately. The flycatchers do not follow the CC's.

Obviously, territories of Cy and CC's are at least partly overlapping here. And both probably overlap last territories.

It looks very much as if their XXXXT's are being conspicuous "in order" to attract other birds to form a mixed flock!!! But so far they seem to have been unsuccessful.

Eventually, the flycatchers disappear. Probably go downhill.

7:07. Further down road. See pair of Whitestarts (usual species) about 100 yds downhill. Sitting about in tops of tall trees. XX

Justly alone. One of the birds sings repeatedly. NODWAH. Shuts up.
See a single bird. Shuts up.

See a pair of birds. They fly off. One apparently
singing the other. With one brief burst of song. NODWAH
on last approaching this area 7:18 am.

See single bird perched 3 ft up singing. NODWAH. Definitely
alone. Shuts up. Definitely. Whitestart down hill begins to sing
g. Also NODWAH.

7:20 Ca. 10,000 - 10,100 ft. Then continue singing down hill.
Then see single bird in scrub along road 2-3 ft up. Feeds
on tubular yellow flowers. Apparently cutting into bases of corollas!
Utters a few rapid-syllable notes. NODWAH. Apparently alone.

Starting back up road. 7:26. See another pair of *Firebell*
s. 10-20 ft up in scrub. Quiet. Definitely alone.

Then 1st song NODWAH. Shuts up.

Everything very quiet 7:40 am.

COMMENT: It is my impression that *rufinuchas* are less a
abundant here than further up the mountain, where mixed flocks do
not occur. Is there a causal relationship here ??? If so, what?
(Note that *rufinuchas* are quite abundant in Papallacta area, the other
area where mixed flocks occur. But there they are replaced by other
species. Which does not seem to be the case here.)

7:40. See single *B. microcrinitatus* hopping thru scrub.
3-4 ft up. Definitely alone. Utters some Bfl's. (I am quite sure that
all or most of the Bfl's heard here have been by *microcrinitatus*.) It
seems to be a common species, in spite of the fact that it is so difficult
to see.

Then this bird meets another of the same species. Both fly off.

in long noisy hostile chase

See another pair of Turdellus. Quiet and alone 10-12 ft up in small trees.

It is clouding up again 4:50 a.m.

Further up road, hear more Loz songs and Rfl's. Overlapping apparently at random.

8:04. One of the sites where mixed flock was seen yesterday. See 2 CC's and 1 Turdellus very close together. Low in scrub. Silent. CC's fly off. Turdellus apparently goes in different direction.

A few yards further on, see what are obviously same CC's again. Now definitely alone. Silent. 3-4 ft up in scrub.

Then see single Dulania across road. Definitely alone. Forest jump. Then pulls Entropellus off leaves 2-5 ft up in scrub. Flies off almost immediately.

Then see pair Blue & Orange Tanager!!! Feeding low in scrub 1-3 ft up. Apparently pulling up fruits and buds. Quite silent.

At same time, I can hear a variety of bird sounds, on other side of road, about 100 ft away. This is direction in which Dulania went a few minutes earlier.

Since, one of the Blue & Oranges is attacked by a hummingbird. Probable XVII. Tanager doesn't react. Hummingbird leaves.

Then the Blue & Oranges fly across road, into patch of scrub and forest where the other bird sounds have been coming from.

I eventually maneuver around so that I can see some of these other birds. A real mixed flock. Obviously partly the same as flock seen yesterday.

Includes 3 fittes, at least 1 (presumably, in fact, 2) Margaritis, 2 Whitestrops, 1 Whitehead, 2 rufinuchas (?), and the Dulania.

see. Possibly others.

Q. Whitebeards quite coherent. Whitebeards in trees 10-12 ft up. Whistlers in scrub 2-10 ft up. Fettis in scrub 6-10 ft up. Mangroves in trees 10-15 ft up. Amurra in scrub, 4-8 ft up. Surf much as in scrub 2-5 ft up. All were quite noisy.

f. H. Fettis apparently in lead. Amurra f. Fettis. All other species f. group separately.

It is obvious that "the" mixed flock here has a definite nucleus. Including Fettis, Whistlers, Mangroves, and Whitebeards. Other species attach themselves to this nucleus, occasionally and/or when they happen to be in the neighborhood.

NOTES: I never saw the Blue & Oranges again after I caught sight of the main body of the flock. Perhaps the Blue & Orange did not stay long (but they certainly did join it for at least a few seconds).

16 Perhaps the CC's and Fimbry seen a few minutes earlier were "outsiders" of this flock.

Flock eventually moves on. Disappears except for the nucleus which stay behind. Perhaps they are separating themselves from the other birds.

17 Walk on further up road. Hear more Laf songs. NODWAH

8:48 a.m. Phrases faint, brief but repeated

See a couple of birds fly by very low in scrub. They might conceivably be the "all noisy Synallaxis". Apparently alone.

8:55. See a group of 3 of the presumed Wronyas (LXXXXX1) flitting about in trees 8-15 ft up. Moderately noisy. Uttering occasional "N"s and R's. Apparently alone.

NOTE: As far as I can tell, these birds are essentially identical.

cal with the Wronyas of Purser in almost all respects. I have not (yet) been able to detect any differences in the "ground color" of different parts of the underparts. Looks all pale whitish yellow.

Then, a few feet further on, come across "usual" flock again. Now includes at least the Sittis, Whitestripes, and Whitebeards. In scrub 6-20 ft up. Also 1 CC! CC f ———→ Sittis. Then Sittis is and CC feed in same tree, picking insects off leaves. CC only 6 ft (or less) from nearest Sittis. No obvious sign of hostility between species.

Possibly the "All-suspect Synallaxis" and/or the presumed Wronyas (also) were "outliers" of the flock.

It seems to be characteristic of this flock that the "nucleus" is always or almost always coherent, but the rest may be very diffuse.

At one time, a single Laf comes within 35 ft of the nearest member of the flock. Silent. Feeds on red flowers. Goes away again immediately. (I don't think that this should be called "joining".)

The Dulencia is singing during part of the time I have the flock under observation. It obviously is not with the flock, or not close to the other birds, at the time.

Flock eventually goes down hill.

Go on up road a little further. Hear more Laf song. NOD W AH. But completely overlapping long, loud, melodious song by manakins. This is another indication that song by members of the "Diglossini Social Complex" is not inhibited by any loud nearby noises!

9:25 10,425 ft. Come across 1 or (more probably) 2 Atlapetes torquatus. Very low in thick scrub. Uttering lots of short, soft, hoarse PN's. Then see single Blue + Orange 4 ft up in scrub about

40 ft away. Blue & Orange gradually comes down to attapetes until
about 15-20 ft away. I think this must be classified as a case of
Blue & Orange f. → torquatus. Then torquatus hops further up
in scrub. Again to the leader, longer, clearer, more usual "long"
T. note. Then all birds go further back in scrub and disappear.

9:37 am Hear 1 CC-like Twitter. NODWAAH

A few minutes later, 2 torquatus back still noisy. But the
Blue & Orange seems to have left them.

Starting back down road. Hear 1st long NODWAAH flutters
up. Then hear 1 CC-like Twitter. NODWAAH

Back to back over 9:55. Flock apparently gone.

Then go down road a few yards to see what probabl
y is part of flock. See 1 White-headed, 1 White-troopie, 1 Blue & Orange, 1
rufousia, and 1 White-troopie (!). All scattered over very wide area.
(At least 100 square yds). All quiet. All species moving at usual levels.
Blue & Orange feeds on mistletoe.

This group is much more diffuse than earlier. Is this because
the Litta (and Margarornis) have gone elsewhere?

Leaving myself 10:15 am.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

March 12, 1966

Atacaso

Going to work in the same area, below San Juan, again
today. Arrive 8:58 am. Just starting to get light. Rather thick
cloud cover. Everything quiet.

Hear first miscellaneous bird sounds 6:02. Thrushes
See a single sooty Thrush alone.

Walking up road. SEE TODAY'S NOTES ON MIXED DISLOSS
INI.

6:27. See single B. microcrinitatus in scrub 2-4 ft up. Very noisy and conspicuous. But definitely alone.

7:06. Going back toward area of "usual" flock. See a group of 4 or 5 birds moving rapidly thru scrub. Apparently all Throum lars. Show no tendency to join microcrinitatus which I can hear about 20 ft away.

See single fulvifrons 6 ft up in scrub. Quite apparently quite alone.

About 30 ft further on, see pair of lyallensis. silent. 3 ft up in mixed-bamboo scrub. These definitely are unirufa. And the birds are quite close to where I thought I saw some species yesterday. Apparently quite alone now.

Doesn't unirufa occur in mixed flocks in this region?? (If it really is absent from mixed flocks, it would be very nice for my general hypothesis!!!).

7:25. Area of "usual" mixed flock. See pair of Blue & Oranges moving thru scrub and small trees. 1-20 ft up. Very conspicuous. Very noisy. Uttering constant "Zuee zuee zuee zuee..." notes. Presumably PN's. But definitely alone now.

But then I run into flock only a few minutes later. Unfortunately, I don't get a very good view of it. Coming rapidly uphill. Certainly includes at least 3 Sittes, 2 Whitestrupes, 1 rufigula, and 1 GT! GT disappears almost immediately, and I don't know where it goes.

Sittes and Whitestrupes alternating in lead. Sittes f —
→ Whitestrupes at least 10 times. Whitestrupes f —→ Sittes

at least 10 birds. Both species range 10-20 ft up in small trees. Both
negotiate off leaves. Both very. Whitestripes utter many R's.

very low in scrub. 2-3 ft up. rufinucha f →
group at least once. But then seems to fall behind.

8:41 Little-Whitestripe-rufinucha group eventually comes up
to where unwaka seen earlier. And unwaka still there (and now
I suspect there probably are 3 inds. of the species here). unwaka beco-
me very vocal as group approaches (altho' this may be a reaction
to me rather than to the other birds). And then the unwaka appar-
ently "draft after" the group for 20 or 30 ft or so. Remaining very
low in scrub. But the Little and Whitestripes are moving so rapid-
ly that the unwaka apparently cannot "keep up". So they appar-
ently stop following.

NOTE: I would have said that the Blue & Oranges seen ear-
lier were on their way down to join this group, but I did not see
them with the group when the latter was visible.

9:41 One or more of the local Laps sang vigorously when the
flock was around. But none of the Laps joined or even (as far as I
could see) approached flock.

9:41 After flock goes, however, I see a couple of Laps alone.
Apparently disputing. Lots of song. NODWAH. It is conceivable that
this dispute arose because one of the Laps "strayed" as a reaction
to the flock.

7:55. Same area. See pair of rufinucha 2-3 ft up in scrub.
b. Uttering lots of "ALCN"s. Apparently alone (now).

8:01. Lower part of "usual" flock area. Hear and then
see Duliana singing. 10-15 ft up in trees.

10:01 About 30 or 40 ft away, in one direction, is a pair of Cys.

Moving about in scrub 2-2 ft up. Uttering lots of low "ah" notes.
Also 1 song phrase NODWAH

Laf This is exactly where Laf - Hummingbird XVII reactions were seen 2 days ago. I.E. Cy territory must overlap that of Laf completely. And must overlap that of XVII at least partially. Either Laf or XVII is visible or audible at the present time.

About 30 or 40 ft from the Dubusia in another direction is a pair of Firebellies 15 ft up in trees.

Cy I think that these Firebellies, Cys, and the Dubusia must all be clumped as alone.

Firebellies fly off down hill. Firebellies fly → White beard. Then Firebellies feed on mistletoe. The exact same clump on which Blue & Orange fed yesterday!

Laf Cys and Dubusia disappear. Apparently in different directions. Some minutes later, mainly Laf begins to sing. NODWAH

Then a single rufinucha appears in scrub. Uttering lots of "alcn"s. Definitely alone.

Sun is out now 8:15 a.m.

About 100 yds down road, see single Firebelly in tree 12 ft up. There also is a small flycatcher in same tree (Contopus???) Firebelly flies off. Flycatcher does not follow.

Then see (another?) pair of rufinuchas very low in scrub. Very noisy. Lots of "greetings". Apparently alone.

Cloud is coming up again now 8:30. Everything is rather quiet. At least for time being.

Laf Some Laf song in distance.

See some more single sooty Thrushes alone.

Some distance further down road, hear more Dubusia.

song. This cannot be uttered by same ind. heard previously.
 See pair of *Turdellus* 20 ft up in tree tops. Alone.
 (See an apparently single *Turdellus* alone, 1 ft up in bamboo scrub
 about 100 yards away)

f. - See a single *Laf* alone and alone, 2 ft up in scrub.
 Also a single *confusio* alone and alone, 1-3 ft up.

Some patches of thin fog coming in 8:55 am

Reach 10,030 ft level and then start back up road.

See another pair of *Turdellus* alone 9:00 am. 2 ft up in scrub along road. Rather quiet.

Then see single *confusio* alone. Undoubtedly same individual seen a quarter of an hour ago.

Hear what sounds like Big Buttercup up hill 9:23.

See pair *Turdellus* alone (again).

Laf singing occasionally. NOBWAH.

See another single *Turdellus* alone. 4-6 ft up in scrub. Quiet.

9:22. Just far below "usual" flock area. See pair *confusio*
 2-6 ft up in scrub. Noisy. Definitely alone.

Laf See a single *Laf* alone.

Back to "usual" flock area 9:30. Flock apparently not around. So I guess that it does make some appreciable movements sometimes!!! Not a purely resident "clump"!

Leaving this area 9:45 am

Go down road to 9875 ft level. Miscellaneous scrub. Not very different in appearance from scrub higher up.

Laf Hear *Laf* song. NOBWAH.

See a pair of *Turdellus*. Moving thru scrub and trees, 10-15 ft up. Noisy. But definitely alone.

Walking further down road, see another single Thryothorus alone
10 ft up in very poor looking scrub.

Then see group of at least 5 Thryothorus chasing one another thru
top low scrub 4-6 ft up. Very noisy. Apparently disputing. Certainly alone

Further on down road, 9625 ft, see another single Thryothorus
alone

Then see pair CC's 2 ft up in scrub side road. Definitely alone
me. One ind. utters Twitter greeting when it lands near NODWAH. Then
both fly off.

Well! Well! Well! 10:05 a.m. See single Margarornis. As
far as I can tell, definitely the usual species. Tree occupying in small trees
15-20 feet up. Definitely alone!!! Then single rufinucha appears.
rufinucha → Margarornis. rufinucha perches about 5 ft
from Margarornis. Quite silent. Then rufinucha suddenly swoops
at Margarornis! Definite supplanting attack!!! Margarornis
flies to an adjoining branch. rufinucha flies away. Margarornis
stays for some minutes. Definitely alone all the time. Then it is
littered away by a passing truck.

This incident would suggest that some of the Atlapetes I have
seen with flocks have been merely "escorting" - just like Diglossa!!!

Laf
then

Then hear more Laf song. NODWAH.

What has happened to the Atlapetes? ???

See single Whitethroat. Silent. Definitely alone. 1-10 ft up
in rather thick scrub.

10:25 a.m. Come to ravine with rather thicker vegetation.

More trees 9,750 ft. Hear more Dubusia song

Come across another group of 3 or 4 presumed Thryothorus. Very

young, 2-3 ft up. Apparently alone!

Another single *F. v. v.* fly by. Definitely alone.

Heading back up road 10:35 am.

10:41 I saw a *F. v. v.* fly over head. Can't tell species. But sounds like *B. v. v.*. Definitely alone.

10:42 am 10:43 ft. See single *B. v. v.* alone.

10:44 am Feeding red flowers 2 ft up in scrub. Flies absolutely no trace of decision patch. I E. *F. v. v.*! Then moves off to scrub.

Pauses about 10 ft from pair of *F. v. v.*. No reaction between the 2 species. *F. v. v.* disappears. *F. v. v.* remains. Alone.

Further along road, see yet another single *F. v. v.* alone. (This probably is the same as one of the individuals seen some time ago.)

10:58. See 1st single. Silent. Alone. Feeding on tubular yell. flowers. Same species on which C was seen to feed yesterday. 1st definitely picking corollas.

Leaving 11:02 am

COMMENT: It is quite remarkable that I have seen only one really large, highly organized, long sustained mixed flock R here in this region below San Juan. Mixed flocks certainly are not well developed here!

It probably is not coincidental that this one large flock spends a large part (not all) of its time in the ravine with the largest amount of "forest" (i.e. real trees). But the difference between the vegetation of this ravine and that of many other ravines (and other areas) is not very great.

In fact, I am beginning to think that the large mixed flock occurs in this one ravine simply because the flocks "happen" to have settled there!

March 13, 1961
Alamosa

Going to work at last place visited yesterday, i.e. below San Juan, starting at ca. 9875 ft. Arrive ca. 6 a.m. Getting light. Clear. Cool.

Dawn chorus already started. At least Thryothorus 6:18. See single rufinucha hopping thru small trees and scrub 3-10 ft up. Definitely alone.

Some distance further on, see another rufinucha perched exposed 3 ft up. Uttering "CN"s. Also apparently alone.

See some single sooty Thryothorus alone.

Then see apparently single B. magister 6-8 ft up clump very dense scrub (with some bamboo). Singing. Apparently alone. B. magister Rfl's overlap rufinucha songs at random.

6:35. Hear Dolichopus singing down hill. Also overlapping nearly rufinucha songs at random.

Further down road, hear more rufinucha and terquatus. Also completely overlapping.

6:44 a.m. 9875 ft. Area mixed bamboo scrub edge ravine.

Hear lots of Diglossini Twitter and other sounds. Then see single Cy flitting thru bunches small trees, 4-8 ft up. A few feet away, there is a pair of H. atropileus !!! 3-4 ft up in bamboo. Very noisy. Whistles & R-Twitters. This must be considered a mixed flock. But then Cy flies away. atropileus do not follow. They continue on thru bamboo scrub. Definitely alone below.

Then Cy reappears. Feeds in scrub at least 150 ft from atropileus. It must be considered alone now. Pays no attention to the

atropis

2:10 pm. Low back up road. See single Whitethroated Quail. 3 ft up in scrub. Definitely alone. Plus off across ravine. Flitting about or solos in flight.

NOTE: The actual whole string of the Whitethroated here is very conspicuous. Quite broad. Going quite far behind eye.

4:00. See single Scrub. Definitely alone. 3 ft up in scrub. Then hear first of long. MODR H. Then see 2 Scrub. One chasing the other thru scrub. Also seen Scrub by lots more birds. Birds are definitely alone.

4:13. See single All-rufous Synallaxis moving thru scrub. 3-6 ft up. Scrub "tree" Scrub. Silent. Apparently alone. Then a pair of Scrub flies into same patch of scrub. Very active and noisy. Flitting about 6-12 ft up. All-rufous f. Scrub Scrub at least 4 or 5 times. Then Scrub fly far away. All-rufous does not follow. Apparently left alone now.

CORRECTION: Now I see that there really are 3 All-rufous here. Definitely alone now. Quiet.

NOTE: This is almost exactly the place where I saw the single Mangrove alone yesterday.

4:28. See a pair of Scrub. 10 ft up small tree. Definitely alone. Then see another single Scrub alone. And a single Scrub alone.

4:33. Top of road. Region rather poor-looking mixed bamboo scrub. See a diffuse flock (or "semi-flock"). 2 or 3 Scrub flitting about noisy. 3-5 ft up in bamboo. 1 cc picking insects off leaves in tree, 6-10 ft up, above them. 20 ft away from Scrub there is a pair of Scrub moving thru bamboo. 2-6 ft up. Also 20 ft from the

Uromyces, but in opposite direction, is a pair of B. rugosulatus 3-4 ft up in bamboo. Uromyces fly off. cc Uromyces rufo-rufus and rugosulatus do not follow the others. Both species go their separate ways. Both must be considered alone now.

Starting back down road 7:47 a.m. (I am actually beginning to reach this area.)

Everything very quiet now.

See another single Turdus alone. 6 ft up in tree.

Then see pair of rufo-rufus 3-6 ft up in scrub. Also alone.

Go on down to 9650 ft 8:27 a.m. see a single Dulcinea. Moving low thru low, impoverished scrub 1-4 ft up. Then begins to sing. Definitely alone.

Starting back up road 8:32.

Near Raf singing at this 9650 ft level. NODWAH. Starts up.

A few minutes later, same level, see single Whistler flitting from tree to tree. Silent. Definitely alone.

8:58 a.m. Very near spot where Turdus and All-rufous Synallaxis seen earlier this morning. See 2 Turdus flitting about in trees 4-12 ft up. Also 3 All-rufous Synallaxis 1-5 ft up in bamboo scrub. The Turdus and All-rufous do not seem to be paying much attention to one another. But they certainly come within 20 ft of one another occasionally. Then Turdus disappear (probably frightened of me).

At approximately same time, 2 or 3 Synallaxis TV appear in scrub very close to the All-rufous. There is a great outburst of activity, all birds of both species flitting about close together, with lots of vocalizations. This looks like a hostile dispute. Then all birds move down hill. All-rufous f TV repeatedly. (But all or most of

this behavior is probably is really hostile chasing.

9:12 A single *Leucophaea* flies over same area. Silent and alone.

9:15. Observing other *Leucophaea* and *Al. rufus* are not behaving aggressively. *Leucophaea* and *Al. rufus* associate with one another simply because they tend to fly to same area.

ADDITION. When *Synallaxis* dispute was at its noisiest, a single *Attagates rufus* also approached and came within 10 ft of the disputants. Then went away again. This must be considered a case of joining. But the *rufus* probably was motivated only by "curiosity" or hostility.

9:18. Same area. See a pair of *rufus* 2 ft up in scrub. Utterings definitely alone.

9:24. Just a few feet farther up road. See pair of Blue & Oranges. Moving thru low scrub 1-3 ft up. Uttering "CN"s. Definitely alone.

Some distance further on, see another single *Leucophaea* alone. And then another one 300 ft further on.

9:38 a.m. Some distance further on, come across another pair of *Leucophaea* 10-20 ft up in trees. Definitely alone. One of the birds (presumably the ♀, as it is the duller of the two) is displaying. Moving about, sitting, and standing, with wings held slightly away from body and drooped but not spread. Apart from this wing pattern, the rest of her postures and locomotor patterns seem to be quite unritualized. Not any obvious ruffling or flapping. Every once in a while, the ♀ utters a "strangled" version of ordinary "Ja-ah" song. When she does this, she also Q's her wings. She also utters pure R's from time to time. This is not accompanied by Q. Small ♂ comes down. ♀ immediately assumes a nearly horizontal posture. Also does TV. And Q's her wings.

again. Silently this time. But ♂ moves away again and ♀ moves again. Both continue to move around actively.

At one time, during this performance, a single ♂ of *Turdellus*. Then ♂ flies away. *Turdellus* do not follow. Fly of a few seconds later in a slightly different direction.

Same pair *Turdellus* back a few minutes later. Definitely all the now. Moderately noisy "PN"s and "EN"s.

Leaving this area 9:55 a.m.

* Reach area 9400 ft 10:02. Some quite good looking AS around here. Thick, if not very tall. Everything very quiet.

A little further down road, vegetation is taller. Looks almost transitional to "VSTF".

Everything absolutely dead! Looks almost as if all the birds had gone off in a huge mixed flock! But this appearance probably is misleading. The general quiet probably is a reaction to the bright (and hot) sunshine.

Hear a few bird sounds 9300 ft. Very low in scrub. Possibly *torquatus* "PN"s. Also hear *Eulonia* singing down hill.

Just clouds coming up 10:26 a.m. Starting back up road.

See a single *Turdellus* fly by. Silent & alone.

Swifter up road 10:41. Hear *torquatus* "Whistle Song". NODWA H. Only lasts for a few seconds. It looks as if *torquatus* may largely or completely replace *rufinucha* in this more humid-looking region!

See single Cy. Silent & alone. 20 ft up in tree.

9:50. See group 2 or 3 *Whitestarts*. 2-4 ft up in scrub. Uttering "CN"s. Definitely alone.

Hear Rfl's in distance.

Leaving 11:00 a.m.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

COMMENT: One aspect of the forest area worked today was very striking. This area seems to contain all the species, except Settia, that we saw in the higher area worked on previous days. But large, long-mantled species seem to be absent here - while at least one occurs in the higher area. This suggests that Settia play a notably important role in the faunas of this region.

March 14, 1966
Atacaso

Going to work below San Juan again. Last place worked yesterday, i.e. 9400 ft and below.

Actually we overshoot the mark, go down to almost 2200 ft. Arrive 6:05 a.m. Getting light. Generally cloudy.

Can hear some DC already! Then some Whitstart songs. NODWAH. But completely overlapped by DC.

This area seems to have rather good forest - scrub. Perhaps intermediate between AS and VSTF.

6:12 First rufinucha-type song. Completely overlapped by DC. Then Whitstart songs again. Partly overlapping rufinucha (again) completely overlapped by DC.

Then there are some more partial or complete overlaps of rufinucha-type and Whitstart songs. Then both shut up.

Then more Whitstart songs. NODWAH. Shut up. Then more rufinucha-type songs. NODWAH. Both overlapping Forbely songs apparently at random.

DC might well be by atropileus

More Whitestart song. NODWAN. Then see single Whitestart definitely alone. 15 ft up.

Then see single Forficulus alone. Also pair rufinucha alone. Both ranging 10-12 ft up.

Then see pair of Whitestarts and single atropuleus close together 4-6 ft up in tree above bamboo scrub. Whitestarts fly off. atropuleus f ———> Whitestarts. Then I lose sight of birds.

DC starts again 6:29. Now I am sure that it is by atropuleus. It sounds as if the atropuleus here are in breeding condition!!!

Whitestarts sing again. Completely overlapped by DC. Then both species shut up.

See single rufinucha fly across road. Sing and alone 6:36. Some distance away, see another pair of Whitestarts 4-6 ft up in bush edge rock slide. Definitely alone. Joined by third Whitestart. This provokes some singing. NODWAN.

Then see single rufinucha singing. Definitely alone. Perched exposed 20 ft up in tree. At first NODWAN. Then Whitestarts sing again. Complete overlap. Whitestarts shut up. rufinucha continues NODWAN. Whitestarts resume. Again complete overlap. Whitestarts shut up. rufinucha continues NODWAN.

Certainly, there is no mutual inhibition of song between Whitestart and rufinucha!!!

Walking up road 6:45. Hear Dulcinea singing in distance. Things are getting quieter now.

See a single Forficulus alone 3 ft up in scrub.

Further along, see pair Forficulus 8-15 ft up in tree. Apparently alone.

6:55. Above 9300 ft. Region where I worked yesterday.

See pair rufinucha in a 3 ft up poor scrub edge rock slide. Definitely alone.

NOTE: rufinucha certainly is not replaced by terquatus here!

4:00:22 See pair Blue-Oranges. Moving thru low scrub edge rock 6" - 3' up. Uttering "is" & "Eating" noises. Definitely alone.

NOTE: This may be another species which is less gregarious here than in some other parts of the Gudea.

4:05. See group of 3 Big Buttercups (identification definite) and 2 Firebellies, all very close together, 20-25 ft up in trees. All feeding on berries. All very quiet. Big Buttercups replace → Firebelly. 2 "sooty" Thrushes → group (!!). Then the Big Buttercups gradually move on. Apparently neither Firebellies nor thrushes follow.

See single Whitestart definitely alone 2 ft up in scrub.

NOTE: There is a road marker here which says "30 KM".

Then presumed by singing 7:20. NODWAH

Go on up road to 9440 ft. Then start down again.

Hear Whitestart singing. NODWAH

COMMENT: It occurs to me that Mutual Inhibition of song

probably is most apt to occur between serious competitors. (Viz. different relations of rufinucha and terquatus vis a vis Diglossini.)

This would be advantageous. It would tend to prevent a species from settling down in areas where too many competitors are present. It would save time and waste of energy.

NOTE: There are a lot of hummingbirds here. This may help to explain why Diglossini (apparently) are rare here.

7:33. See a couple of sooty Thrushes alone.

Then see a single rufinucha alone 20 ft up in tree.

Then see pair Firebellies alone. 1-2 ft up low scrub along

going to be a colony. Bird (response) definitely alone

W. E. Can see White Ceryle further down valley. I E this
response is very faint

Go to end to 1000 ft without seeing anything more. So start
to go up road again to 15

8:53 Hear what sounds like a singing down hill. W. DU'AH

Back may call but more than a song

* See a single Whitestart. 5 ft up in scrub. Alone

9:10. See pair of rufous-bellied. Just 2-5 ft up in scrub along
road. There also is one or more Hemiprocne or Bairdianus type in same
scrub approx. 20 ft away. I go to 15 ft. I see 2 species are interacting or
not. Also I see a couple of GT's. One in tree, 20 ft up. About 30
ft from rufous-bellied. (and even further from Hemiprocne or Bairdianus
us). The other is about 40 ft away. Both very noisy. Loud metallic
nasal notes. Single notes and R-like patterns. Slightly reminiscent
of Big Buttercups. Finally, the distant bird joins the nearer one.
Both move off. Nothing follows. I think these GT's must be class-
ified as alone.

9:33 am Some considerable distance further up road. See
group 2 or more All-rufous Lynellus. Very low in very thick mixed
bamboo scrub. Very quiet. Apparently quite alone.

by A little further on, single of flus by alone. Goes from tree
to tree, over a small, enormous area

Leaving 9:50 am.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

COMMENT: Atlapetes leucopterus here seems to fill much
the same ecological niche as Saltator aurantirostris in some other
parts of the Andes.

March 15, 1960
Hono

Arrive town at 5:54 a.m. Starting to get light. Clear.
Down chorus is in full swing! Good!!

6:12. See a couple of single Sooty Thrushes alone

SEE TODAY'S NOTES ON MIXED DISJOINT.

6:24. See single Torquatus. Silent and alone. Stepping along ground in middle of dirt path!

NOTE: Looking around, I can see that all the vegetation around here, including the scrub, is very loosely second growth. Part of the scrub certainly is lush!

6:32. See pair of Torquatus silent and alone. On ground of path. One of these presumably same individual seen earlier.

See lots more Sooty Thrushes alone.

After 7:01. See After fly out of scrub. Silent. Then see pair of Hily popoies in scrub which After has just left. Ranging 3-5 ft up. Silent. Definitely alone now. (I presume that this After-Hily group will have to be classified as a mixed flock, for purposes of statistics, but it probably was "coincidental".)

8:09. See single Trubellus. Silent and alone. 3 ft up scrub edge ravine. CORRECTION: There is a pair of Trubellus here. They move off thru scrub. Nothing follows or joins.

8:14. See single rufinucha. Silent & alone. 2 ft up in scrub.

NOTE: I have seen a lot more Sooty Thrushes alone than I have bothered to record above.

See single Yellow Greenback alone. Perched 10 ft up in conifer.

8:35. See pair of Whitetails low in scrub ravine. Probably

same pair seen earlier. Still silent and alone

8:10 See single *Frederickia* alone 4 ft up in *Eucalypt* in ravine
below *Paraná* mossy

9:21 See single *Mercon* crested catanga. Silent and alone. Low
in bush

9:33 See single *B. nigrostrigatus*. 3 ft up in scrub. Silent.
Also see single *Atter* in scrub 10 ft away. Warbler moves on. *Atter*
does not follow

March 14, 1966
Atacaso

Going to work above San Juan this morning. Area where I worked in previous years. Arrive 5:50 a.m. Just starting to get light. Sky partly cloudy. According to my altimeter now, the altitude here is 11,100 ft.

Everything is very quiet now.

Hear first bird sounds (clawatores) 5:52 a.m. Followed by a few thrush sounds. Then a somewhat greater variety of songs and other noises

NOTE: The vegetation around here is rather "patchy." But quite a lot of it looks like mature AS. And up here we are at the head of a valley which has quite a lot of nice forest in it.

6:14 See pair of *rufinuchas*. Ranging 4-6 ft up in AS. Uttering lots of PN's. Definitely alone.

6:27 See pair *rufinuchas*. 1-3 ft up low scrub edge *Paraná*. Probably same pair seen earlier. Very noisy. Lots of greetings. Greetings very elaborate:

Twitter - R - "green weak weak weak" type notes
 length of phrases somewhat
 variable

Is this Diglossini-like ???

Then pair definitely is still alone.

Then see single hummingbird still. Silent and alone. Feeding
 tubular white flowers. (Same species on which it was seen to feed a few
 days ago.)

6:35. Thrush really are very dull here.

See some single sooty thrushes alone.

6:47. See same pair of rufinuchas. Still where they were. Still a
 lone. Now uttering "PN"s, 1-3 ft up in scrub.

6:51. See single CC. Silent and alone. Perched 3-6 ft up in dead
 bush. Looks quite dull (brownish gray) underneath. (But certainly
 not black gray). Flies off immediately.

Then hear some Twitters in distance. Can't tell if they are CC or
 hummingbird. But certainly completely overlapped by rufinucha song.
 Then Twitters stop.

6:53. See single Laf. Perched exposed 1 ft up in AS. Silent and
 definitely alone.

7:02. Some rufinuchas still singing. NODWAH

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

7:55. Hear Dubana singing down hill.

8:13. See another pair of rufinuchas. 2-6 ft up in AS. Definitely
 alone.

8:17. Twitter along path. See another, single rufinucha alone.
 2-4 ft up in scrub. Uttering "PN"s.

2 birds single & ~~several~~ flies by. Definitely alone
Flying 9:40 am.

March 17, 1966
Road to Baza

Going to try to go past Papallacta today, on the road to Baza.
Finally arrive region 7870 ft. 6:20 am. Quite light. Patches of
fog drifting by.

Area of mixed (AS - YSF) and pasture.
Hear patches of what is either Lajon Whitestart Song in dist
ance. NO NWA. Also Trichothraupis sounds. Also B. nigrorostatus sounds.
Pair of Trichothraupis flies by overhead. Alone.
Also see single Whitestart flitting from bush to bush. Apparent
ly alone.

Obviously, from sound, there are lots and lots of birds here!
6:24. Area very mixed scrub & forest. See definite mixed flock.
2 Whitestarts and 2 Whitestripes. Ranging c-15 ft up in trees. Whitestar
ts j ———> Whitestripes Whitestripes j ———> Whitestarts. Both up
easily noisy. Whitestarts song. NODWAH.

I also hear some Atlapetes quittings 30 ft away. But Atlapetes
apparently do not follow flock.

Then see single Yellowbelly. Perched 20 ft up in tree, 40 ft from
flock. Then flies away. Goes past flock without any indication of joining.
I.E. this Yellowbelly is alone.

Walking along path, hear more Whitestart Song NODWAH.
Bird sounds less numerous by 6:45 am.
6:50. Hear Dulcinea song in distance.

Then hear lots more Whistlant Long. NODWAH.

Then see single Whistlant. Definitely alone 3-6 ft up in scrub edge pasture.

There is light rain, fog, and wind all together now. 7:00 a.m. Obviously all the birds are keeping under cover as much as possible.

Still more Whistlant Long in distance. 7:04 NODWAH

See a single sooty Thrush alone.

7:15. See single pair ^WBasileuterus - or ^WNeospingus - types 3 ft up in second growth scrub edge pasture. Probably Whistlantes (But possibly same species as "Black check" seen above Papalluta). Definitely alone at first. But then they go further into scrub. And then I hear Atlapetes PN's from this new area.

7:19. Hear some Atlapetes Whistle Long in distance. NODWAH

7:21. Not far from where mixed flock seen earlier. See what is large mixed flock again. Includes pair of Whistlantes, 2 Whistlantes, 2 Flycatchers ^WII, and 1 or 2 Towhees. All moving around 6-20 ft up in trees. All moderately noisy. But I can't tell who is leading.

NOTES. ① Identification of Towhee (ies) definite. I.E. this is one of the few places where Towhees and Yellowbills overlap.

② The flycatchers ^WII undoubtedly were with same flock when seen earlier this morning. (I didn't mention them because I didn't think they were "relevant".)

③ The Whistlantes here seem to have definitely gray cheeks (and probably caps). I did not notice this in the Whistlantes seen above Papalluta last week.

④ Once, a Towhee flew 40 ft away from flock. Nobody followed. Eventually, Towhee flew back and rejoined flock.

Passerwest stopped 7:35 am

Go on down road to 9450 ft 7:40. Upon further similar veget

ation. Passerwest. Brown coming back

See 1000 feet. Definite alone

Still alone. Quiet throughout 8:00 am

Go on down hill path to 9100 ft. See single Yellow-belly 2-3 ft up around mouth of old pasture. Uttering SN's and long. But definitely alone

NOTE: Population of Yellow-bellies here does not seem to be very large. Less dense than in Central Cordillera Colombia

Also seen over Whitefly forest. NODWAH

Also see another lone Yellow-belly. Definitely alone

Go on down to 9100 ft, 8:20 am, without seeing anything more. So start back uphill again

Heard quite a lot of *B. microscutatus* Off's. Without being able to see the birds. But it must be a common species here too.

NOTE: Possibly the Firebelly does not occur as far down hill as here. Possibly the level 9800-9700 ft is the only place where Firebellies and Yellowbellies overlap (very Central Cordillera)

Go on down highway to 9625 ft. More mixed pasture and scrub. With VSTF up hill.

Speak of the level! See single Firebelly (definite) 20 ft up tree edge pasture. Definitely alone. Then flies up into isolated VSTF tree. Still alone. Quiet throughout

8:45. Going down hill thru pasture. Reach 9475. See single Blue & Black (definite) flying from tree to tree edge pasture. 10-40 ft up. Uttering CN's. Definitely alone at least part of the time

Once lands in tree where there is Sooty Thrush 25 ft away.

But the 2 species do not react to one another. Blue & Black flies on Sooty Thrush's does not follow.

8.11.11 Then see pair of Sittis in an isolated V.S.T. tree, where the Blue & Black paired, apparently without stopping. Sittis ranging 20-40 ft up. Feeding insects off leaves. Also feeding on red and yellow flowers. Long, stem, tubular flowers. And definitely pecking at base of corolla.

NOTE: This species of flower is common all over Quito region now. I also have seen it in other parts of the Andes. But certainly none of the other Diglossini around here have fed on it while I was watching.

8.11.11 These Sittis certainly are alone at least part of the time. While they are in this tree, I hear very long, fluctuating notes coming from it.

8.11.11 This must, I think, have been uttered by one of the Sittis. Presumably the song of the species. It may be significant that this was uttered while the birds were not in a mixed flock.

8.11.11 Sittis eventually fly off into another V.S.T. tree 100 ft away. Sooty Thrushes → Sittis (!). Can't tell if the association is "coincidental" or not. Then all three birds disappear.

A few minutes later, see single Forficella. Silent. Definitely alone. Feeding isolated clump scrub in middle of pasture. Ranging from ground (sic!) to 2 ft up.

Still later, see pair of Blue & Blacks feeding in trees edge pasture. 20-30 ft up. Definitely alone.

Beginning to rain hard 9:05 a.m.

9:10 a.m. Only a little bit further down pasture see group of 3 Altapetes pallidirostris. Moving thru scrub 2-4 ft up. Then hear 4 wren or larks in same patch of scrub. Then hear B.

significantly off the same patch scrub. Then a single Blue & Black fly into the 20-30 ft above scrub birds. I think that this must all be considered a mixed flock, but it certainly does not appear to be very highly organized or coherent.

Blue & Black fly off. Nothing follows.

It probably is significant that the fatter, who may be not far away, do not join this group!!!

Scrub birds drift off and disappear. A few minutes later, pair of Blue & Black fly into nearby VSTF trees. 15-30 ft up. Definitely alone - altho very near.

Rain stopped 9:28 am. Wind also is somewhat weaker. And everything becomes quiet all of a sudden!

9:40. Hear more far off in distance. NODWAH. Brief. Going back up toward road, see single Treebelly. Flying from tree to tree. In second growth. 20-25 ft up. Definitely alone. See some more sooty Thrushes alone.

9:48. Again, see single Blue & Black fly by alone (As far as I can tell, there is only one pair of Blue & Black here).

Then hear Diglossini Twitter in distance. Obviously Cy. NODWAH. Bird sings repeatedly. Invisible. But apparently fairly high in tree.

9:50. Up by road (9625 level). See definite mixed flock.

In second growth scrub. Includes at least 1 Whittitart, 2 Whittitars (again, gray of cheek very conspicuous), 1 Woodpecker TVT, 2 Blue & Black. All birds very quiet. Blue & Black 10 ft up. All other birds ranging 2-8 ft up. Whittitart in lead.

9:58. Now see that there are 2 Whittitarts with group Blue & Black. —> Whittitart.

Also see single Dubonia with flock! Dubonia f —>

Whitetail. Whitetrupe f. → Whitetail repeatedly. Wasps
 or CVI f. → group repeatedly.

Blue & Blacks seem to have left group now

NOTE: Again, it probably is significant that flocks are not with this flock.

Walking up road, see some more flocks. Thru bushes alone
 Leaving 10:10 a.m.

COMMENTS:

① I am not sure that the social behavior observed today was typical of the area or not. But certainly there was no great number of large flocks when the weather was bad !!!

② In general, this whole series of regions on the slopes of Antisana looks very similar to Purace. And, with today's trip, I have covered a series of environments roughly comparable to all the environments visited on Purace (with the exception of the lowest site on the wet, east side of Purace). And certainly flocks are fewer, smaller, and simpler throughout this Antisana region than in the equivalent areas on Purace.

③ There may be some difficulty in comparing some of my observations in different parts of the Andes because of differences in altitude. Thus, for instance, I have worked only at very high and moderately high altitudes in Central Ecuador. But there is one point that should be remembered in this connection. The vegetation of some or all areas here resembles the vegetation at somewhat lower altitudes in other (only northern?) parts of the Andes. (Note that the area worked this morning is far below the upper limit of AS !!!)

④ In general, this morning's observations confirmed one

of my previous excursions. Some (not all) of the species which are abundant in mixed flocks in other parts of the Andes play similar roles in Central Ecuador. But they are comparatively rare here (NOTE: I have been rather surprised not to see Troglodytes or Buthraupis eximia here. They must be very rare indeed!)

(5) I think that I have finally solved the whole problem of geographic variation in flock-formation.

Flocks certainly are correlated with frontiers. But probably only one type of frontier. Frontiers with the humid subtropical zone. Flocks do not seem to be particularly characteristic of frontiers with arid temperate zone, or arid lowlands, or humid Paramo.

Of course, it is obvious that species inhabiting scrub and forest of the humid temperate zone must stray into scrub and forest of the humid sub-tropical zone more frequently than they stray into any kind of grassland or arid scrub.

Thus mixed flocks seem to be characteristic of just those frontier areas where different faunas are likely to overlap and mix!!!!

This, and some other considerations, may help to explain or identify the principal advantages secured by the habit of forming mixed flocks:

At one time, I thought that the principal advantage secured by most (not all) of the members of mixed flocks was added protection against predators — and that this was particularly important in very humid areas, where the flocks are most highly developed, because of poor "visibility" (dense vegetation, frequent rain, cloud, fog, etc.)

But it must be significant that mixed flocks are not particularly highly developed in dense, humid, vegetation near the frontiers of grassland and Páramo. (Viz the areas just below Páramo on Atacaso, and the forest near Palca, in Central Peru). This in spite of the fact that some of these areas seem to be just as humid (e.g. covered by fog as frequently) as other areas near the frontiers of the humid sub-tropical zone!!!

This indicates (undoubtedly, I think) that the principal advantage of "allo-gregariousness" is social, and connected with the mixing of faunas of different life zones. I.E. it will permit an individual straying into a new life zone to take advantage of the knowledge (of both food and predators) of the old inhabitants of this zone. (Similarly, it may facilitate learning useful information from "strays" from another zone. And, of course, it may also reduce hostility in areas where "strays" are likely to be encountered comparatively frequently.)

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

Atacaso,
March 18, 1966

Going to work below San Juan again today. The lowest area worked previously. Arrive 5:50 a.m. Just starting to get light. Sky largely cloudy. Hear first miscellaneous bird sounds 5:55 a.m.

CORRECTION. We stopped at wrong place! Go on down to right spot. Arrive 6:03 a.m.

SEE TODAY'S NOTES ON MIXED DIGLOSSINI

Well! Well! Well! 6:15 a.m. See pair of White-throats 4-6 ft up

in scrub and road. One large repeatedly NODWAH. Then Cy (!) appears —> Whitestarts. Cy silent. Then Cy supplies Whitestarts repeatedly. This does not look hostile. It is much the result of the fact that Cy is following —> Whitestarts now. Whitestarts fly across road. Cy f —> Whitestarts (again).

Then Whitestarts move uphill thru scrub. Cy disappears from my sight. Probably left area. Then the pair of Whitestarts runs into a third ind. of the same species. A dispute breaks out. Lots of flitting around, 6-10 ft up. Also lots of long NODWAH. Then a pair of Sittes shows up in scrub. Hanging 6-20 ft up, 3-30 ft away from Whitestarts. A single Junco also shows up, perches in tree 10 ft up, near both Sittes and Whitestarts. Then Junco disappears. Sittes stay around for a minute or so. Then fly off into distance. Apparently no one follows.

These "assemblages" must be classified as 2 flocks. But neither could be characterized as "highly organized." (They appeared to be the result of the usual "tentative early morning mulling about.")

NOTE: When these Whitestarts moved up hill, they passed right by a bird uttering DC (presumably atropileus) without pausing for a moment. Thus, the DC-ing bird should not be considered a member of the flock.

6:30 am Some distance up road. See single Blue & Orange and single rufinucha together, 3 ft up roadside scrub. Quiet. Then Blue & Orange fly across road. rufinucha f —> Blue & Orange. Birds gradually moving uphill. In direction of a pair of Whitestarts feeding (NODWAH) 30-40 ft away. Then Whitestarts suddenly fly down hill. Whitestarts f —> group. All birds feeding close in

scrub. Then a second Blue & Orange appears. The 2 Blue & Oranges sit about, apparently chasing for some seconds. Then settle down peacefully close together. Then Whitestarts fly down hill. rufinucha f —
 → Whitestart.

Then leaves Blue & Oranges alone, temporarily. Then group of Wronyas f — → Blue & Oranges! Blue & Oranges still low in scrub, 1-6 ft up. Wronyas 10-12 ft up small trees.

Then Blue & Oranges fly down hill. Obviously joining → Whitestart-rufinucha group. This leaves Wronyas up hill alone.

NOTES: (1) The Wronyas here probably are less "allegregous" than those of the Central Cordillera of Colombia.

(2) If the rufinucha do play a specialized role in flocks here, they are followers, i.e. active nuclear. But, I seem to remember that they were passive nuclear in some parts of the northern Andes. Thus, the variation within this species may be much the same as in the BC BT.

7:01. Walking up road. See 2 B. nigrorostatus. Very noisy. Lots of Rfl's. About 10 ft apart. 2-4 ft up. Both disappear, alone. Bird sounds beginning to decline by 7:12 a.m.

7:21. See pair Wronyas 2-10 ft up road side scrub. Both noisy. Apparently alone. (Altho I can hear both Whitestarts and nigrorostatus as not awfully far away.)

NOTE: There are lots of Quans around here. Which suggests that there has not been much hunting here.

See some single Sooty Thrushes alone.

7:41. See single rufinucha f — → group of 2 or 3 flycatchers in second growth scrub. rufinucha ranges 1-3 ft up. Flycatchers 2-6 ft up. Flycatchers noisy. Lots of R's. rufinucha silent. Then flycatchers appear to be CV — the species seen below Papallacta yesterday!

Down to 7423 ft Everything dead quit 7:55 am Starting
of down road again

Arriving to reach this area 7:57

8:00 am. I see a little bit in the morning around here
that is that a large part of the local avian fauna has assembled
into flocks and gone uphill on the hill.

8:13 Speak of the devil! A group of 3 GT's moving rapidly
by uphill. 6-10 ft up in scrub. Yellow greenish "cat's" definitely alone.

A minute later, hear Big Bittern whistles far down hill.
Then see pair Big Bittern flying from tree to tree 20-30 ft up.
Definitely alone. Not following route taken by GT's earlier.

Then see single *C. b. b. b.* Perched silent and alone 25 ft up in
tree.

8:21. Hear *Dubura* song down hill.

Down by car, in another single *C. b. b. b.* alone 6 ft up in scrub.

8:33. See pair GT's. Ranging 6-15 ft up thick scrub. Quite
noisy. At first definitely alone. But then single *C. b. b. b.* \rightarrow
GT's. The 2 GT's do not stay close together. Ranging from 2 to 50 feet
apart. (This may be characteristic of the pairs of this species.) Then see
single *C. b. b. b.* \rightarrow group. Then I see that there is also a *juv. GT*
in neighborhood (dull colors, black bill)

Some distance further down road, hear *torquatus* Whistles.
NODWAH.

8:58 am. Large region bamboo scrub, with a few scattered
VSTF trees, below where car is parked. See pair GT's fly into tree. Land
25-30 ft up. Feed on white berries. Then single maroon crested cotin-
ga lands right beside GT. Stands with crest crested and spread. Then
attacks GT. A vicious peck. GT flies off some yards. Then cotin-
ga

fly off to chase the other ^{off} GT just keeps retreating, but stays in same tree. Then a group of 3 ^{Blue & Black} (definite) f —————> group P.

Then pair of GT's fly off. Nothing follows. GT's must be considered alone now.

Then 1 Blue & Black fly far away in opposite direction. Other must be considered alone now. Other 2 Blue & Black stay in tree. The Cotinga does not attack them, even though they seem to be feeding on same type of berry as the GT's earlier!!! Then I see that there is also a single warbler quite near the Blue & Black. Apparently Black burnian.

Eventually the two remaining Blue & Black fly off in same direction as first. Nothing follows.

9:02. See pair of All-rufous *Synallaxis* moving thru mixed bamboo scrub. Ranging 4-6 ft up. "Tree-creeper". One outburst of noise (reaction to me?). Otherwise quiet. Apparently quite alone.

Light rain starts for 7:10 am. Stops 7:16.

9:25. See pair *Thomomys* 6 ft up in bamboo scrub. Fairly quiet. Apparently alone.

9:32. Near car (and where fitties seen earlier this morning) see definite mixed flock. Uphill. Region very mixed scrub and forest, with some bamboo. Group includes 2 ^{White}tarts, 2 *Thomomys*, 1 *Forcella*, 2 *rufinucha*, and 2 ^{Plush}-capped Finches (definite)! *rufinucha*s and ^{Plush}-capped Finches stay fairly low, 4-10 ft up. Other species range 10-30 ft up. All very quiet. Except White-tarts which sing occasionally (NODWAH). White-tarts in lead most of the time. *Thomomys* f —————> White-tarts repeatedly. All other species f —————> group repeatedly. Only once, is the *Forcella* in lead, briefly. White-tarts f —————> *Forcella*. ADDITION: Now I see that there

are 2 *Trichospiza* with group

When group first appears, a pair of *B. magister* flies down hill, in loose pursuit, buzzes to other B's. Then gradually move up hill toward group. Then 1 *magister* starts *group*. The other move away from group! (Was the "joining" actually "escorting"?)

NOTE: There definitely are no flocks with this group

Leaving 10:00 a.m.

COMMENT: Until this morning, I thought that mixed flocks probably were more common around Papallacta than below San Juan. Here - I am not so sure!

If flocks were more common around Papallacta, this could be easily explained. Warm temperate fauna of the eastern slopes should have more extensive frontiers with humid subtropical fauna.

If flocks are not more common around Papallacta, why not???

March 17, 1966
Hono

Going to work on path above town. Actually, we have a little trouble finding it. But eventually arrive 6:03 a.m. Quite light. Clear up hill. Fog in valleys.

6:14. See single *Trichospiza*. Perched 6 ft up in Eucalypt. Scags ignores Scam 10 ft away. This *Trichospiza* should be classified as alone.

6:31. See a single *rufinucha*. Perched silent, alone, 6 ft up.

6:33. See a single *Footy* *Theraps* alone.

Then see pair of *rufinuchas* moving thru scrub 3-12 ft up. Very noisy. Lots of *Quettung*. Long R's, "Whush" Notes, semi-

Further. Birds definitely alone.

Going down path, see another single Forficula alone. Also feeding on mistletoe.

7:02 a.m. See 2 B. microcratus 4-5 up in scrub. Very noisy. Possibly disputing. Certainly alone. More sooty Thraupis alone.

Further down path, see another B. microcratus alone.

7:12. See a single Th. cyanocephala. Silent and alone. Feeding small fruits in tree, 10 ft up.

Going back up road. 7:55. See single Forficula alone 30 ft up in Eucalypt.

8:15. See another B. microcratus alone.

8:37. See another rufinucha silent & alone. 4-10 ft up in scrub.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

March 20, 1966
Atacaso

Going to work below San Juan again. Same place worked day before yesterday. I.E. the lowest area visited. Arrive 5:55 a.m. Starting to get light. Sky clear. Patches of fog, which were in valleys earlier, seem to be lifting now.

Bird sounds have already begun. DC starts 5:57

6:10 a.m. Same place where flock with fittis seen day before yesterday. There is a single atropileus (identification definite) uttering DC in bamboo scrub. Ranging 3-10 ft up. Definitely alone. Then a pair of Mitotartus appears. About 50 ft downhill. Alone. Gradually move up toward atropileus. Ranging 6-15 ft up in scrub. Eventually,

Whitethroats \rightarrow atropileus. Flitting about very close
actually. Sometimes close to atropileus, sometimes 20-25 ft away.
R. nigriventris being occasionally. Noisy but completely overlap-
ped by atropileus D.C. Then pair of Forficulles group
Range 4-20 ft up in scrub. This group starts to move off. atropileus
us \rightarrow Whitethroat. Then I see sight of birds
This certainly is a flock, but probably not a highly organized one.

Going to start walking down road 6:25 a.m.
See single R. nigriventris. Apparently alone. 3 ft up in bam-
boo. Rather quiet.

Then see single Forficulles alone.
Further down road, see a pair of nigriventris. Definitely a
couple. Ranging 3-4 ft up in bamboo. One ind. utters Rfl's.

6:42. See a pair of Forficulles 10-15 ft up small tree edge bam-
boo scrub. Quiet. Alone.

* Some distance further on, see single Synallaxis-type 2 ft up in
bamboo. Apparently medium dark gray all over. Silent. Alone.
Could this be juv. All-scapus ???

Reaching region of thick but obviously second growth scrub.
6:48. Everything dead quiet here.

* Go on down to 8990 ft. Then see pair rafinchii. Ground
to 2 ft up edge road. Definitely alone.

NOTE: This area looks very humid. Lots of bamboo. But
also a few patches VSTF left.

7:30 See single Forficulles perched 4 ft up in scrub. Silent.
Apparently the "outlier" of a not very coherent flock. I can hear flight
chirp(s) about 15-20 ft away. Also see a single Cy, 10-15 ft up, sa

the general area. Also see some Whitestart same general area. If fly on. Nothing follows. Other birds just seem to disappear. Presumably gone downhill.

Go on down to 8870 ft 17.50 Then start up road again. Hear some more Whitestart song. NODWNT.

Am beginning to reach this area 17.58

8:06. Same area where Cy-Whitestart - flycatcher flock seen earlier. See 2 Wronias flitting about, 2-6 ft up in scrub. These presumably are the birds that were with flock earlier. But now definitely alone.

8:27. 8950 ft. See pair of ingrostratus in bamboo scrub 4-10 ft up. Silent. Definitely alone.

See a single sooty Thrush silent and alone

8:45. 9010 ft. See group 3 Big Butterflies flying from tree to tree. Definitely alone.

Then see group of 3 Whitestarts 2-6 ft up in poor scrub on rock slide. Also alone. Then pair of fittis appears. Coming from far downhill. Land in small trees, more than 50 ft from Whitestarts. I.E. they must be classified as alone now. Pick up insects off leaves in usual way. Then fittis of Whitestarts. Then one fittis flies away.

Far across valley in one flight. Nothing follows. And I don't see that there are any other birds in the tree in which this fittis eventually lands. I.E. this fittis must be classified as alone again. A few minutes later, the other fittis leaves the Whitestart group. Goes from tree to tree in short hops. Probably heading in direction of its companion. The Whitestarts do not follow this fittis either. And certainly there are no other birds in the trees visited by this fittis. I.E. this fittis also is definitely alone again.

COMMENT: It now seems very probable that the fittis of this re

given occur by themselves alone more often than the flocks of other regions and/or tend to occur in much looser, more distant, more scattered with the species!!!

A few minutes later ca 9:00, a pair of Big B. tinnuncius (re) appears. Flying 20-25 ft up in trees. Often quite widely separated from one another. At same time, I also see single Firebelly 75-100 ft away low in scrub. There is no overt reaction between the 2 species so I shall have to class them both as alone. Altho I shouldn't be at all surprised if the behavior of the Firebelly is being influenced by the presence of the Big B. tinnuncius.

* Cloud cover has come up 9:10 a.m.

9:20. Ca 9:15 ft. Not far from where first Alb type R's heard earlier this morning. See definite mixed flock. Unfortunately, silhouetted against sun. But group includes at least 2 or 3 Whitestarts, 1 or 2 Basilinna tinnuncius or Hemiprocne types (almost certainly Whitestarts), 1 Uromyza, 2 Blue & Orange, 1 Firebelly. Presumed Whitestarts in lead. Followed by Uromyza and/or Whitestarts. But Whitestarts disappear after a few minutes. Blue & Oranges f —————> group repeatedly. Firebelly f —————> group repeatedly. Firebelly always or almost always bringing up the rear.

Firebelly usually 6-10 ft up trees. Blue & Oranges usually 2-4 ft up in scrub. Presumed Whitestarts and Uromyza usually 6-10 ft up in scrub. Whitestarts ranging 10-20 ft up.

Group as a whole very coherent. But quiet.

At one time Alb ♂ (identification definite) appears right in middle of group. Silent. 2 ft up in scrub. Then flies away. Nothing follows. Then Alb ♂ flies back to group!!! Still silent. Ranges 2-4 ft up. Then disappears again.

Group as a whole gradually moves up hill. Lost to view.

NOTE: This is less than $\frac{1}{4}$ mile from where Lethes seen earlier. & if they had been looking for a flock, they could have found one without much difficulty.

COMMENT: It is possible that the Lethes here are breeding (note the separation of the 2 birds this morning). But surely they must also have been breeding in some of the other regions during my periods of observation ???

9:40. A few yards further up road site where All-rufous - Synallaxis civ encounter was observed some days ago. Hear a lot of furnaroid type sounds. Possibly a dispute between same species. But unfortunately I can't see the birds.

* 10:00. Getting back up near car. Large area bamboo scrub. Hear Whistled Song. NPDWAH

Then see single Firebelly fly by alone.

Fog starting to come in again. Leaving 10:30 am

COMMENTS: I must get more counts! It is beginning to look as if a lot of species join flocks less frequently here than elsewhere, even when both the species themselves and mixed flocks are common here. Viz. Uromyza and Margarornis as well as Lethes.

Feb
Attn It should be mentioned, in this connection, that some of the Diglossas, especially Laf and Ater, also seem to "escort" mixed flocks less frequently here than elsewhere. This is further evidence that the habit of associating with other species has been selected against here. But I am not sure that I understand the disadvantages (for Laf and Ater) here.

Could the explanation be as follows ??? A Diglossa "escorting" a flock probably always increases the attractiveness of a

flock and let the same thing may burn, the other birds away.
 In regions like those of the northern Andes, the increase in attractiveness
 versus possibly is relatively minimal. Simply because most flocks
 of these regions are (already) large and very attractive. But the
 increase in attractiveness might be much more significant here
 simply because most flocks here are not very large or attractive.
 Thus the disadvantages of "exciting" probably are greater
 here than in the northern Andes, while the advantages may be
 the same.

(Of course, this little discussion is based on the assumption
 that these particular *Dryobates* species do not derive advantages
 such as increased food or protection from mixed flocks!!! And that
 they do not receive more advantages of such types in the northern
 Andes than down here!!!)

ADDITION: A thought has just occurred to me! I may have
 discovered another general rule! The species for which the
 principal advantage of joining mixed flocks is protection are usually
 brightly colored (e.g. the bright arboreal tanagers). While the
 species for which the principal advantage of joining mixed flocks is
 increased food are usually cryptically colored (e.g. flycatchers and
 dendrocolapts).

This would suggest that the bright species have developed
 the habit of joining flocks simply in order to get protection. (Of
 course, they could also get protection by becoming cryptic. But this
 might raise havoc in their intra-specific sexual reactions.)

Of course, a prime exception to this general rule would be
 provided by "dull neutral" parakeet nuclear species. But are there
 any species of this type in the Andes??? How about *Cnemidophorus*?

(Actually, I think Cunucropterus may be both insectivorous and omnivorous.)

Which brings up another problem. Why are dull neutral species comparatively rare or absent in the Andes?????

Are the flocks here younger and/or less specialized than those of lowland Panama????

March 21, 1966
Atacaso

Going to work in same area again today. Arrive site just above where Alce was seen yesterday 8:52 a.m. Just starting to get light. Dense and low cloud cover. Light rain!

6:16. See a couple of Toucanets 10-12 ft up in scrub. Alone.

6:32. See some single sooty Monarchs alone.

SEE TODAY'S NOTES ON MIXED DIGLOSSINI

7:05. COMMENT. So far there has been no indication that mixed flocks become more common when the weather becomes bad here. In fact, rather the reverse!

This confirms the impression I received below Papallacta the other day. But today's observations probably are more significant. There has been no wind here today, while there were very strong winds at Papallacta the other day.

* Go on down to area where fitties seen yesterday. Arrive 7:14. There are a lot more bird sounds around here. Primarily warblers. Also some Whitethroats song downhill. WODWAAH. But overlapping Whee song at random.

7:17. See pair of ruspinchias 2-6 ft up in poor scrub on

very narrow. Plum-colored line on back - black - red - white.
Dorsal fins small and pointed.

Paul just dropped in in 3.30 am

For sale will be 8⁴⁵ ft. long - 60 ft. wide - 12 ft. deep.

Just as I start to go, I see a very large and new letter to

[illegible]

I see a few unmistakable roots within the group. 67% of

→ BYB's Plural range of —→ And do, repeat the

NOTE: There may be two partly-repeated layers of worn clastic flakes in this region. @ the "broken flakes" @ the "two flakes".

NOTE: As far as I could tell, there were no letters in this flock.
I looked for them particularly carefully.

7.35. Rain quite stopped now. And sun is duly visible thru clouds! Birds in general very quiet.

9:40 8850 ft. A group of 4 all-rufous Symplesmus flies across road. From bamboo scrub to mixed second growth. *Refinita* above.

9:48. Some distance further on. Lee wife standing alone. 2-5 ft up in scrub.

9:58. 8950 ft. Come across large flock which may be partly the same as large flock seen earlier lower down. Now includes at least:

Full 1 P.T.E. 1 C. 2 H. 1 B. 1 Blue & Orange 2 Myiarchus, 1 Basileuterus
 1 Myiarchus 1 Myiarchus 2 Myiarchus 1 Myiarchus 1 Myiarchus 1 Myiarchus
 t. All 1 Myiarchus 2-10 ft up in steep slope. ET and Basil
 or 1 Myiarchus 1 Myiarchus also up into 10 ft tree

Can't tell who is leading. Last seen hanging 5-10 ft hanging
 of 1 Myiarchus Blue & Orange also hanging 10 ft up in trees. ET and Basil
 usually near front

ADDITION. 9:07 9 seen 10 ft up in trees hanging in group some
 where. NODUWAH 10 ft up in trees 3 ft up 10 ft tree

COMMENT. How it would appear that flock formation is pos-
 sible in a range of good weather!

12:23 7:00 ft. 1 Myiarchus 1 Myiarchus 1 Myiarchus 1 Myiarchus 1 Myiarchus 1 Myiarchus
 Probably saw 1 Myiarchus 1 Myiarchus 1 Myiarchus 1 Myiarchus 1 Myiarchus 1 Myiarchus
 1 Myiarchus 1 Myiarchus 1 Myiarchus 1 Myiarchus 1 Myiarchus 1 Myiarchus
 Leaving 10:35 a.m.

March 22, 1966
 Atasco

Going to work same area again today. Arrive with above tenet
 one of presumed second All 5:57. Just starting to get light. Heavy cloud
 cover but no rain.

SEE TODAY'S NOTES ON MIXED DIGLOSSINI

6:27. 1 Myiarchus 1 Myiarchus 1 Myiarchus 1 Myiarchus 1 Myiarchus 1 Myiarchus
 Then in group 3 Myiarchus 1 Myiarchus 1 Myiarchus 1 Myiarchus 1 Myiarchus 1 Myiarchus
 apparently alone.

See some 10 ft. 1 Myiarchus 1 Myiarchus 1 Myiarchus 1 Myiarchus 1 Myiarchus 1 Myiarchus

Also a pair of B. myiarchus alone 2-4 ft up in bamboo

Going down road 7:25 see single Thronyas flying. 10 ft up. Bombus scrub. Definitely alone. NOTE: (1) This bird is not new for from large mixed flock Bombus and Diadema notes. It also included Thronyas. But it shows no tendency to join in for own flock. (2) This bird definitely has 'backyard' color of throat and breast whitish, 'back yard' color of throat and breast yellowish. I.E. it is exactly like the birds of the Central Cordillera of Colombia.

COMMENT: The Green and White hummingbird must be one of the species which derives protection and little or nothing else from mixed flocks. I have never seen it feed on anything except flowers while it was with a flock. (The bird with flock seen earlier this morning was feeding on bromeliads and a species of pink tubular flower which the local Diademas apparently do not touch.)

7:51 Hear more Whitestart Song NODWAH. Stops. Then hear 2 songs downhill. NODWAH stop. Hear more Whitestart Song NODWAH stop. These species also seem to be inhabiting our entire valley!

8:00 am 8900 ft. See another group of 3 Thronyas in bamboo scrub. Ranging 3-10 ft up. Flying but definitely alone. Sun reaching this area now.

See a group flying thru scrub uphill. Includes 2 Forficulles and 1 ind. of another species (quite possible Dabunia).

Everything very quiet now 8:15 am

8:27 8480 ft. See single Green and White hummingbird. Alone. Suddenly it is attacked by another ind. of the same species! Both fly off. (One of these inds. at least, appeared to have whitish or grayish forehead. Dust or pollen.)

8:31 A single bird flies by. Definitely alone. It appeared to be Cramolencia albiceps!!!

COMMENT: It must be significant that "excorting" *Allegreanormus* is common only in this area, where mixed flocks are (relatively) highly developed (see below).

(2) It also is significant that Ays do not seem to form flocks very frequently here (altho the local population of Ays may be quite substantial).

Finally, after a considerable delay, a GT's join group. Then whole group moves down hill and disappears.

COMMENT: I am beginning to think that *Allegreanormus* is as well developed in this particular small area as in the Sierra de Nevada and the Eastern Cordillera of Colombia!!!

9:45. A little further up road single *Allegreanormus* fly above. Then see single *Uromyias* alone in bamboo scrub.

10:01. 9225 ft. Region mixed bamboo scrub. See single *Uromyias* as alone one side road. Also pair *B. nigrocrinitatus* alone 30 ft away on the other side of the road.

Leaving 10:00 a.m.

COMMENTS:

It is obvious that *Allegreanormus* increases as one goes downward along the road below San Juan. Compare observations at different "stations", i.e. around 10,850 ft, around 10,500 ft, around 10,000 ft, around 9350 ft, and around 9000 - 8750 ft. This increase is more or less gradual — altho there may be a sudden "jump", a disproportionate increase, when one gets to the 9000 - 8750 ft. level.

Flocks are not only common at this lowest level, but also comparatively varied. Around 10,500 ft, for instance, I saw only one large highly organized flock (Litt, *Margarornis*, etc.). Around 9000 - 8750 ft, however, one sees a variety of highly organized flocks.

(flocks" but also brightly colored arboreal tanagers, flocks following the disappearance of the all-rufous Syngnathus, etc.). Probably many birds move from one type of flock to another. But even though there are more different types of flock organized flocks are not totally synchronous at the least level!

This increase of Alouatta occurrences with decreasing altitude supports my hypothesis that such a phenomenon is an adaptation to life near a humid forest with the Upper Subtropical Zone.

Certainly, the increase of Alouatta occurrences is not directly correlated with any (other) obvious factors of the environment. It is not directly correlated with humidity (The upper reaches of this valley, ca 10,500 - 11,000 ft are more humid than the lower levels, simply because they are more often in cloud). It is not directly correlated with tallness, maturity, or apparent richness of forest. (The forest around 10,500 ft and around 9,350 ft seems "better" in all respects than the forest ca 9000 - 8750 ft.) It probably is not directly correlated with density of population, i.e. number of inds. per square foot. (The population of inds. of species that join flocks does not seem to be more dense at 9000 - 8750 ft than at 9350 ft.) Nor does it seem to be correlated with number of species present. The number of species present, seems to be approximately the same at 9350 ft and at 9000 - 8750 ft. (The 9350 ft level has some species, e.g. Laf and Blue and Black, which apparently are lacking at the lower level. While the lower level has some species, e.g. the BYB and Basileuterus coronatus, which apparently are lacking at the higher level.) And certainly the species which are most important in mixed flocks are identical at both levels!!!!

It is particularly significant, therefore, that the lang-

ent increase in *Allegreanomen* scapes at the exact same level, 9000-8750 ft, where some species of a definite "sub-tropical aspect" (i.e. the B1B, *B. coronatus*, and possibly *Allegreanomen* (apt. $\leq VII$)) appear!!!! I might add that these "sub-tropical" species are not more gregarious, per se, than many of the species of higher elevations.)

ADDITIONS:

① The 9350 ft and 9000-8750 ft levels are less than $\frac{1}{2}$ Km apart by road.

② The vegetation of the 2 areas is similar. Except that the 9000-8750 ft level has even more extensive patches of bamboo (usually, in other areas, an indication of impoverishment).

③ It is probable that some of the "facultative" members of mixed flocks (such as *rufinucha* and the *Trochilidae*) occur relatively more frequently in mixed flocks at the 9000-8750 ft level than at the 9350 ft level.

March 23, 1966

Atacaso.

Going to work same area again today (i.e. the "9000-8750 ft level"). Arrive 5:34 a.m. Clear. Relatively cool. Getting light.

NOTE: The car is parked just above the second *Albi* territory. And this is 9200 ft according to my altimeter now!

Go on up to area where *Sittis* were seen alone a few days ago. This also is near area where third *Albi* was heard singing yesterday. It is approximately 9220 ft according to my altimeter now. I shall use this as the upper limit for my special count of this "level".

6:12. See single *Thryothorus* alone

6:13. See single *Thryothorus* alone. Above 2 ft up road & possibly
 scrub. See single *Thryothorus* alone

6:22. Walking down road 9 ft. Not far from here I stop
See *Thryothorus* near yesterday. Then it goes DC taking from second year
to scrub. Bird probably perched 2-3 ft up in bush. Apparently alone.

Then little flies into same scrub. Bird is 1 ft up. Probable 2-3 ft from
 atropis. atropis continues DC. Bird just sits quietly. Then flies
 away. atropis does not follow.

Then bird flies into another bush. bamboo scrub. Continues
 DC. Now I assume it will definitely atropis. Then flies across road.
 Apparently goes into bush. B. the birds. now. Gradually move
 off. Apparently still alone.

6:35 a.m. Some distance down road see pair *Thryothorus* 4 ft
 up bamboo scrub. Moving. Apparently alone.

Birds in general already noticeably quieter 6:37.

See some more sooty *Thryothorus* alone.

6:42. 9070 ft. See single *B. superciliosus* uttering RFL's 4
 ft up in bush. Apparently alone.

6:54. Ca 9000 ft. See another pair *Thryothorus* flitting about in
 scrub. Apparently alone.

Everything certainly seems dead today. Is it because of the cold?

7:01. 8710 ft. See a single *Thryothorus* alone 2 ft up bamboo.

7:15. Ca 8875 ft. See group 4 All-rufous *Synallaxis*. Region
 very mixed bamboo scrub. Ranging 2-5 ft up. Quiet. There also is a single
Rufousia in scrub 6-8 ft from *Synallaxis*. I can't see any obvious
 reaction between the 2 species, but I shall have to call this a mixed flock.

7:25. Go on down to lowest point usually visited in this area.

It is just about 8200-8300 ft according to my altimeter now. I sh
ould probably describe this area as the "8000-8200 ft level."

NOTE: All altitudes noted in my notes that trip are correct.
7:40. Place where all surfaces - surfaces group seen earlier.
The surfaces are still there. Hanging 1-3 ft up in branches. And
then a surfaces 1 —————> All surfaces. This surfaces probably appa-
rs in group. surfaces fly off across road. surfaces 1 —————>
surfaces. All surfaces do not follow. Then they start to "mob"
me. Interestingly enough, this "mobbing" does not seem to attract any
thing else. All surfaces disappear along road.

Then the All-uniforms quiet down. Resume feeling peacefully. And
then a single terquatus \rightarrow All-uniforms

COMMENT. The all-rufous Synallaxis may be passive in the nest or here, whenever they are in mixed flocks.

A few minutes later, catbirds sang per syrphid up hill.
Probably saw birds now with all birds earlier. Ranging 3-6 ft up
uttering PN's. Tachycineta seems to have disappeared. But there is a clearly
adapted CVI with the syrphids at first. Then syrphids disappear.
can. Presumably move on. CVI does not follow. A few more.

7:58. Sweeter up road. See single Monizias alone in branch (again). 10 ft up. Moderately noisy.

8:02. Still further up. See single rufinucha alone 2-3 ft
up in very poor bamboo scrub.

8:07. Sun beginning to reach this area. At C +!

SEE TODAY'S NOTES ON MIXED DIGLOSSINI

9:02 Ca 7100 ft. Near what sounds like Big Buttercups.
for the first time today. Brown bill
Starting down road again.

9:30 am. A single Cy. flycatcher seen earlier this morning
by 9:30 am. A single flycatcher. Possible joining the
flock.

9:35 am. A single flycatcher 5 ft up in scrub. Silent. App
arently alone.

Go on down to low point of area 7. 13 am. Then start up again.

See an occasional bird fly overhead, without being able to identify it.

9:50 A little bit up road, hear what may be large mixed flock far
on ravine. Too far away to see birds. But both Cy. and White-throat (?)
singing. Partly overlapping.

Then a single flycatcher and a single White-throat flycatcher fly. Silent. Def
initely alone at the time.

Now I am beginning to hear more bird sounds all over the place.

9:58 am. It does sound as if flocks are assembling!

Then see single Cy. flycatcher. Silent. 6 ft up in scrub. Fly across
ravine, to where flock sounds are coming from! A single Big Buttercup
flycatcher. And some brown bird (all-rufous???) fly. →
Big Buttercup. Looking over to where these birds land, I see a cou
ple of green birds flitting about in trees. GT's??? Also 1 Th. cyano
cephala (definite). Also 1 Rusty Thrush! Then a single Blue & Bla
ck flies away from group. Nothing follows. Blue & Black must be con
sidered alone now. But it must have been with group earlier.

I think that all these birds, up to and including the Green and
White hummer, must be classified as forming a single flock. But a very
diffuse one.

This may be partly the same as the very large and diffuse flock
I saw in this same general area a few days ago.

10:15. Hear first Dalman song of the morning.

10:28 am 8730 ft. Green and White Hummingbird. I saw
at Percheron number One, similar to a well striped wood. It was going
down into grass Green and White Hummingbird.

10:44. Area where atropileus were heard this morning. See 3
Big Buttercupis. In small trees and low in scrub. Very noisy. Lots of
whistles, rattle-like patterns, and HAC-type Notes. Apparently, disputing.
One pair flies off in one direction. Group of 3 in another direction.
Both groups apparently alone.

Leaving 10:55 am.

COMMENTS:

In general, the behavior of the birds here today was rather different from their behavior on previous days.

This must, I think, have been due to the cold. What seems to have happened is that some of the species which are important in mixed flocks left the area. Presumably they went to some warmer place. Presumably to some place in the Upper Sub-tropical Zone.

NOTE: The species that disappeared were all, or almost all, brightly colored tanagers. E.g. the Blue & Orange, the Big Buttercupis, the G.T. Pombly also the Plum-capped Finch. The only 2 brightly colored tanagers that remained were the Towhee, and the Blue & Black. It probably is significant that these are the two species which seem to be least closely tied to mixed flocks.

Green
Both
Apparently, the Diglossas, bush-finches, bush-tanagers, and bush-warblers, did not move at all. Nor did the Whitestarts.

Probably the Green and White Hummingbird moved with the brightly colored tanagers. Again, another "obligate" commensal!

I am not sure what happened to the Littles. Possibly the last Little left after my observation of the atropileus - Little "group".

It is likely that the bright tanagers, and their associates, re-
turned to the road, that a large flock was seen again.

The birds' observations would suggest that there
are more species here, at 9200 - 8800 ft level, than at the "9550
ft level. (The difference is due to the "Upper Sub-tropical" spec-
ies here.)

There probably is a general rule that, within any given re-
gion, allopatricity is most highly developed where the number
of species is greatest. (Of course, this cannot help to explain the differ-
ent degrees of allopatricity in different regions.)

There is a causal relationship here. Either allopatricity
runs is absent in some parts of some regions because certain parti-
cular species are absent from those parts. Or, much more probably,
certain particular species are absent because they "need" to join
mixed flocks and the formation of mixed flocks would be disadvan-
tageous in those parts.

Certainly the whole of this 9200-8800 ft area is basically
humid temperate. Thus I can only study the interaction of strays from
the Upper Sub-tropical Zone into the Humid Temperate Zone here.
I probably will have to rely upon my notes taken in Colombia and Ve-
nezuela for descriptions of the interactions produced when strays from
the Humid Temperate Zone wander into the Upper Sub-tropical Zone.

It probably is significant that the most characteristic Up-
per Sub-tropical species observed at this 9200-8800 ft level have
been seen only with mixed flocks.

NOTE: I still do not understand why Atlapetes schista-
ceus (and A. pallidimucha) do not occur along this road below
San Juan. It looks very much as if the local rufimucha have some

have been able to "take over" the "usual substrates" such as 111

March 24, 1962
Atacaso

Going to work at "9350 ft level" this morning. Arrive 8:35 a.m. Starting to get light. Clear, cool, windy.

Car stops at usual site. This is 9410 ft according to altimeter now!

Watching usual *H. atricapillus* uttering DC in grass or scrub. (Not only alone at first. Then, as usual, pair of *Whitetails* gradually move up hill in general direction of *atricapillus*. *Whitetails* feeding frequently, completely overlapped by DC. *Whitetails* eventually \rightarrow *atricapillus*. Then pair of *Amabilis* appears in adjacent scrub, & I think that they must be classified as having joined \rightarrow group. But group coherence is not coherent (yet). Then *Whitetails* fly away. Nothing follows. And *Amabilis* seem to drift away in another direction. I think all 3 species should be considered alone now.

NOTE: In general, birds are quite noisy here this morning. Sounds as if breeding season were coming on.

6:26 a.m. Near car. See single Blue & Black. Silent. Apparently alone. Feeding low (2 ft up) in rather poor scrub edge slide.

Then see pair *Whitetails*. Moving thru scrub 6-12 ft up. At first alone. Then move up hill. *Whitetails* \rightarrow *Amabilis*. The 2 species stay close together for some time (altho they don't show anything else in the way of reactions to one another). I think that this must be classified as at least a temporary coherent flock.

6:36. See single Blue & Orange. Silent. 2 ft up low scrub. Apparently alone.

as well as a few ft away. This must be considered a flock. Or some-
 vent. And then 10 ft further on, no matter - Whitetraps and a single Peter
stripe only 2 ft apart. Then on a few ft. Then a single Pendle, CC and
 a superciliosus appear in same level! All birds 1-3 ft up. All
 quiet. All very close together. All obviously are members of same flock.
 And flock is coherent. CC f. \rightarrow superciliosus

A few minutes later, and a few feet further on, back unrecognizable
 ble GT sounds. Possibly GT also is member of flock?

Then we come flock again. Still includes Whitetraps, 2 Whitetraps
 as, and superciliosus (sic!!!) Also 1 Pette, 1 superciliosus and 1
Blue & Orange. And I see that there really are 2 Whitetraps with group.

This really is a very large flock for the reason!!! I think it
 contains as many species as any flock seen down below, at the 9200-
 8800 ft level!

All birds low in num. And all birds still quiet. Group as
 whole still coherent.

Whitetraps definitely in lead at front. But apparently moves so
 far ahead that it seems to become separated (at least temporarily).
 Must be considered alone at this time.

Blue & Orange and superciliosus alternating particularly closely.
Blue & Orange f. \rightarrow superciliosus repeatedly. superciliosus f. \rightarrow
Blue & Orange repeatedly.

Fog lifting 14:50 a.m. Wind has dropped. Getting warmer.

NOTE: This area where particularly large flock was seen is
 9560 ft. And it is covered with not very dense or rich-looking scrub!!!
 No VSTF near by!

Everything very quiet 7:55. Sun is beginning to reach area.
 8:00 a.m. 9630 ft. See single Whitetraps alone.

Leontideus rosalia silent and alone

8:15 am. Trip road reaches the 1st large road. Then
 we go on with the same trail. *Leontideus*!!!
 The 1st is on the road and is not followed.

8:20 am. *Leontideus*!!! In a 2nd large road, 1st further on. Fly into
 road tree. Reach 3 ft up. I see that one is definitely *Leontideus*. But the
 other appears to look like a *Leontideus* posture. I am not sure. The 2 birds hop
 around nervously, only a few inches apart. No display or actual fighting.
 Then *Leontideus* flies a few feet away, large road. Then it is up
 the road. Then presumed *Leontideus* flies away too.

COMMENT: I think that the most likely reason a hostile encounter
 for *Leontideus*!!!

It probably is significant, therefore, that the *Leontideus* here do not
 seem to be in breeding condition. At least, not far advanced. It would
 seem to be a general rule here, that hostile interspecific encounters occur
 only when one of the species involved (always *Leontideus*???) is not in breeding
 condition!!!

NOTE: This is an area which gets sun relatively early in the morn-
 ing. Also there is an old slide here which is covered by relatively sparse
 scrub. Both factors must favor *Leontideus*.

NOTE: It probably is characteristic of inter-specific disputes that
 they are not accompanied by display postures or movements.

8:25 am. Some distance further on, see another Black *Leontideus*
 silent and alone. 3 ft up scrub. Probably *Leontideus*.

8:29 am. Reach 9400 ft level. Start back down road again.

8:34. Group where dispute between *Leontideus* and presumed *Leontideus* was
 seen earlier. A single *Leontideus* flies by. Definitely alone.

8:38. 9325 ft. See group of 3 *Leontideus* feeding in the top upland

ll. Apparently alone

NOTE: AM 30 part is here. I have made most of my observations at this level below the main.

11. More of Long Alo-Nadwan (Japan) singing quite frequently here.)

Further down road, regular of *Fundulus*, 2' - 1' up on scrub on cliff.

11. Quiet. Apparently alone

9:10. 9450 ft. See single *Fundulus* alone. 10 ft up on cliff.

A minute later, see mixed flock in scrub of various species. *Whitethroats*, 1 *Whitethroat*, 1 *Thronyas*, 1 *Phylloscopus* CV, 1 *Blue*, 1 *Orange*. *Thronyas* in lead. Blue & Orange bringing up rear. 1 *Fundulus* group. Then, apparently, leaves again.

12. Interesting enough, I know that there are both Cy (3) and Laf (3) in the neighborhood. But apparently neither of these species joins the flock.

13. ADDITION: There is at least 1 *Fundulus* with group. Also a *Blue* and *Orange*. And then 2 flocks appear. Associate particularly closely with Blue & Oranges for at least a few seconds.

Then a pair of Blues & Blacks flies overhead. Without forming flock. (No hesitation at all!)

A little further on, 9:34, see 3 *Fundulus* alone.

NOTE: This level probably does have approximately as many

species as the 9200-8800 ft level. The 9200-8800 level has the *Open* and *White* hummingbirds, *Ally*, *B. coronatus*, the BYB, and *M. granatensis*. But this level has CC, *Laf*, *Ally*, and *Phylloscopus* CV.

Back to car 9:47. This is now 9400 ft according to altimeter!

9:50. Just a little bit below car. Come across another and quite different large mixed flock. Includes, *B. macrostictus*, at least 1

NOTE. I have worked along approximately 1 Km of road at both the 9700-9300 ft and 9200-8800 ft levels. These 2 stretches are separated by approximately 1/4 Km. The combined stretches, with intervening gap extend from well above the 30 Km marker to just below the 32 Km marker.

MORE COMMENTS. I have now worked out my figures on both the 9700-9300 ft and 9200-8800 ft levels.

It turns out that the Allogregarianness of the birds of these two areas is quite remarkably similar !!!

This suggests that the birds of the 9700-9300 ft level are "prepared" to "receive" species of the Upper Sub-tropical Zone ("USTZ") — even when the latter are absent.

It also suggests that the Allogregarianness of the birds of the 9200-8800 ft level is, in some sense, "intrinsic". It probably is not purely a reaction to the actual presence of USTZ species (at any given time).

Apparently, the population is somewhat denser at the 9700-9300 ft level than at the 9200-8800 ft. level. Presumably, this is because the vegetation is slightly richer at the higher level (at these particular sites).

There are some indications that a slightly higher proportion of inds. occurs in mixed flocks at 9200-8800 than at 9700-9300. Also flocks may be slightly larger at the lower level. These differences, if real, may be due solely to the presence of USTZ species at the lower level.

Everything seems to be working out beautifully !!!!!

March 23, 1966
Atasco

Being down further along road than previous. Above region
200 yds. S. of road. Trying to get light. Cloud cover.

Down hillside a well wooded area we arrive. Dec. 2 ft. All sorts
of things. There may also be some small mammals in the ground but they
are rather scarce.

Continuing a lot of birds in this area in a bushy condition

NOTE: There is rather poor scrub and pasture on one side of the
road here and rather dense forest on the other side (across narrow

SEE TODAY'S NOTES ON MIXED BUSHY

6:47. See single B. coronatus type. Probably rugosus type. Then
up the "ledge" edge pasture forest. Definitely alone.

Then see single Attagates feeding. Definitely rufinucha. 4-5 ft
up tree edge pasture. Definitely alone. Then joined by mate. Both birds
move off the "ledge". Lots of ON's and Quittings. Birds ranging 2-6 ft
up still definitely alone.

6:58. See single B. coronatus. 6-8 ft up mixed forest and scrub
across narrow. Apparently alone.

Fog coming in. 7:02 a.m. Go on down to area 8475 ft. Lots
of bamboo. Some scrub. Occasional trees. Everything quiet. Fog is begin-
ning to turn into very light rain.

See a single Loxia thru alone 7:15. 8390 ft. CORRECTION: This
is thru is associating with a definite mixed flock. Other birds include
at least 1 Uromyias, 1 B. coronatus or Hemiprocne type, 2 rufinucha,
and 1 Black-capped Finch. All birds very quiet. Moving 2-8 ft up thru
mixed-bamboo scrub. Uromyias definitely in lead throughout.

Thrushes fly away. Nothing follows. Group as a whole is quite coherent, insofar as almost all birds stick close together. Then 2 Thrushes fly — group disappears almost immediately. Then single fly —

group fly f — group repeats. Then group disappears up hill.

Further down road, hear White-throats singing. 7:40 8325 ft. See very loose, apparently non-coherent flocks of *Thryothorus* abundant, second growth low scrub. Includes at least 2 *Thryothorus* sp., 1 fly, 2 other birds. Sooty Thrushes fly — group. Then Sooty Thrushes fly away. Nothing follows.

A little further down road, see single *Thryothorus*. Apparently alone 6 ft up mixed-bamboo scrub edge pasture.

Then see 1 or 2 *B. superciliosus* alone 6 ft up bamboo scrub by stream.

7:50 8295 ft. Region mixed second growth trees and bamboo scrub. See single *B. superciliosus* ranging 1-10 ft up. Also pair White-throats ranging 8-10 ft up. Also single *Alcedo*, 10 ft up. Also single *Myiophobus*, 2-6 ft up. White-throats and *superciliosus* many. All birds about 20-30 ft apart. Then *superciliosus* fly — White-throat. Then group of 1 ♂ Black-burnian (black and orange, with white on wing), 2 Blue & Blacks, and 2 Firebellies appears. Ranging 10-12 ft up. Blue & Blacks & Black-burnian amounting particularly close fly. Blue & Black fly — Black-burnian. Black-burnian fly — Blue & Black. Firebellies fly — group repeats. Then the whole assemblage gradually drifts up hill. All species (*White-throat*, *superciliosus*, etc.), with the possible exception of *Alcedo*. Blue & Black - Black-burnian an association probably in lead most of time. But group as a whole is not coherent.

Is it a good relationship between Blue-Black and Black
 Vireos? Try the observations the other day at 9700-9300 ft
 Oct.

NOTE: It is quite remarkable that I have seen only Horned Larks
 and Zonotrichia here today!! This must, I think, be correlated with
 the fact that most of the original forest here has been destroyed. Apparently
 the most characteristic VSTZ species have not been able to adapt to the
 scrub which has replaced forest. Also, most, they have been replaced by
 Horned Lark species — which are used to scrub in their normal
 environment.

It would appear that, along this road, the VSTZ species have sur-
 vived as high up as 8300 ft. bordering the Horned Lark Zone, in what
 was once the highest limit of the VSTZ.

Starting back up road 8:17 a.m.

8:21 See single Thomomys in bamboo scrub. Definitely alone.
 Probably same ind. seen earlier.

8:33. 8350 ft. Groups of Thomomys pairs rapidly thru mix-
 ed bamboo scrub. Definitely alone.

See some more footy Thrushes alone.

Ala! See group 3 or 4 BYB's. Feeding on small berries. See
 edge road 10-20 ft up. Flying but definitely alone.

Ala! 8:54. 8345 ft. See single ♀ (!) Ala. 2 ft up roadside scrub.
 Definitely alone.

NOTE: It has just occurred to me that "exorting" of flocks seems
 to be done only by male Albas here!!!

9:10 a.m. 8500 ft. Region of road slide, covered with miscellaneous
 scrub, between mixed bamboo and VSTF. See mixed flocks. Includes at
 least 2 Mitotarts, 2 Ptychocheilus IV, 1 All various Synallaxis, 3th

209
Juncos, 2 Pink-capped Juncos, 1 Blue & Black All gone. All
ing 2-10 ft up. Different inds often are very far apart from each other.
At least 100 yds. But all gradually moving uphill at same speed.
This is definitely a coherent - if widely scattered - flock. Difficult
to tell who, if anyone, is leading. Possibly Hyacinthos at last
out of the trees.

Light rain starting again 9:24.

COMMENT: Physically, this environment looks perfect for Yellow
bellies. And yet they seem to have been replaced by *Hyacinthos* through
out the whole of this western range. Why?

NOTE: It is possible that the Pink-capped Juncos completely replace
Cass Blue & Orange at this level. Possibly only because bamboo is so com-
mon here.

NOTE: Sitta seems to be completely absent here. And yet it does not
seem to be replaced by WCE. Why? See reason here for Sitta, and not enough
a forest left for WCE?

Leaving 9:35 a.m.

COMMENTS: Another thought has just occurred to me.

The very poor development of *Allogregarioides* at Hono and
d Lea must be significant.

The avian faunas must have been in contact with typical
humid USTZ forest (or scrub) at one time. Very records in char-
pman. At which time, *Allogregarioides* presumably was highly de-
veloped. But now the local faunas have "frontier" only with "g
rass" (pasture). And they seem to have become adapted to this new
situation by losing *Allogregarioides*.

This would suggest that changes in gregariousness occur
rather rapidly,!!!!

NOTE. I have been a little careless in my use of terms, this morning and on previous days. When I said "VSTZ", I meant VSTZ with more or less "no soil" forest and scrub.

SUM TOTAL ALL OBSERVATIONS (1966) = 87 hrs 15 min

Observations in cleared land not suitable
for flocks

= 4 hrs 15 min

Time spent in areas which looked
suitable for flocks

= 83 hrs 00 min

Time spent in areas where highly
organized flocks actually seen

= 62 hrs 45 min

Parrotal Sumo Central Ecuador

✓ I ~~Sumo~~ ^{which looked suitable for flocks} 1964 & 1966

$$28 \text{ hrs} + 83 \text{ hrs} = 111 \text{ hrs}$$

$$\text{Inds seen alone} = 239 + 606 = 845$$

$$\text{Inds seen in flocks} = 30 + 453 = 483$$

$$\text{Total no. flocks} = 11 + 78 = 89$$

$$\text{Total no. highly organized flocks} = 0 + 34 = 34$$

$$\text{Largest no. species in flocks} = 10$$

$$\text{Largest no. inds in flocks} = 17$$

$$\text{Total no. species in flocks} = 23 + 278 = 301$$

II ^{which looked suitable for flocks and} Areas in which highly organized flocks seen (only 1966)

62 hrs 45 min.

$$\text{Inds seen alone} = 606 - 134 = 472$$

$$\text{Inds seen in flocks} = 453 - 16 = 437$$

$$\text{Total no. flocks} = 78 - 5 = 73$$

Total no. highly organized flocks = $34 - 0 = 34$

Largest no. species in flock = 10

Largest no. inds. in flock = 17

Total no. species in flocks = $278 - 11 = 267$

✓ III Areas which looked suitable for flocks, but in which highly organized flocks were not seen - 1964 & 1966

48 hrs 15 min

Inds. seen alone = $239 + 134 = 373$

Inds. seen in flocks = $30 + 16 = 46$

Total no. flocks = $11 + 5 = 16$

Total no. highly organized flocks = $0 + 0 = 0$

Largest no. species in flock = 3

Largest no. inds. in flock = 4

Total no. species in flocks = $23 + 11 = 34$

24, 25

Inds alone

[illegible]

Largest no. inds in flock

17-19

Total No. of flocks

~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~

~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ |||| 78

No. highly organized flocks

~~///~~ ~~///~~ ~~///~~ ~~///~~ ~~///~~ ~~///~~ ~~///~~ 34

Largest no. species in flocks

10 10

III III III 453 Jews in Rocks

440

Species in flocks

2 2 2 98

2 4 2 10 8

3 2 3 2 4

4 3 3 2 4

6 2 2 3 7

2 2 6 3/06

2 3 2 2 (10)

3 3 2 2

5 3 3 2

7. 2 4 8

2 3 2 2

2 4 (30) 6 2

17 2 2 3

2 4 3 2

5 5 2 4

4 2 9 10(9)

2 3 8 3

152) 2, 3, 2, 2

Recorder

Overly appropriate suitable for flocks but
 not a highly organized flocks
 All observations 1964 +

Inds Alone

(134)

Inds in Flocks

|||||

(16)

All this to be subtracted from previous total
 in records available for flocks

No Flocks

|||||

(5)

No Highly Organized Flocks

0

Species in Flocks

3

2

2

2

2

(11)

Largest no Inds in Flocks

4

Largest no. Species in Flocks

3

See Over

664
 134
 530

Hours

March 10	2 hrs 00 min
March 13	3 hrs 45 min
March 16	3 hrs 45 min
March 19	3 hrs 15 min
also March 8	3 hrs 45 min
March 7	3 hrs 45 min

20 hrs 15 min.

Central Ecuador
 9000-9300 ft below sea level
 13, 14, 18, 20, 24

Inds in Flocks
 IIII IIII IIII IIII IIII IIII IIII
 IIII IIII IIII IIII IIII IIII IIII
 IIII IIII IIII IIII IIII IIII IIII

(117)

Inds in Flocks
 IIII IIII IIII IIII IIII IIII IIII
 IIII IIII IIII IIII IIII IIII IIII
 IIII IIII IIII IIII IIII IIII IIII
 IIII IIII IIII IIII IIII IIII IIII
 IIII IIII IIII IIII IIII IIII IIII
 IIII

(124)

Inds in Flocks
 IIII IIII IIII IIII

(21)

Inds in Flocks
 3 3
 2 2 4
 4 6
 10 3 (21)

Highly Organized Flocks
 IIII IIII

(9)

3
 2
 8
 8 3.67

Largest No. Inds in Flocks
 12

(15)

2
 3 (10)
 3
 2
 3
 3
 2
 2
 3

Largest No. Species in Flocks
 10

(10)

10

3
 3
 2
 2
 3

Hours

March 13	1 hr 00 min
March 14	3 hrs 15 min
March 18	4 hrs 00 min
March 20	0 hr 45 min
March 24	5 hrs 00 min

14 hrs 00 min

On the Pacific

1500-2000 ft below San Juan

March 20, 21, 22, 23

Inds. in Flocks

(93)

Inds. in Flocks

(125)

Total No. Flocks

|||| | (19)

Sp. in Flocks

4 8

2 29

2

3 96

2

9 4.0

8

2

9

10

2

2

2

3

2

2

2

Highly Organized Flocks

|||| | (6)

Target No. Inds. in Flocks

17

(17)

Target No. Species in Flocks

(10)

Hours

March 20	2 hrs	15 min
March 21	3 hrs	15 min
March 22	4 hrs	00 min
March 23	5 hrs	00 min

TOTAL 14 hrs 30 min

February 10, 1964
Marathon, Puerto Rico

Going to work around hotel first this morning. Altitude of my room is 8150, according to my altimeter last night.

Rain! Pouring rain!!

6:05 See a pair of *Myiophobus* moving thru scrub alone. Light is very poor, but they look like the "red-necked" or *ruficeps*. Uttering "Secret" Notes and R's.

A second later see a single Orange-bellied Saltator in nearby scrub. Apparently not following the *Myiophobus*. Sang a little.

6:10. Single Orange-bellied Saltator, possibly same bird, singing on top of small bush. Hear or see "Whit-chit-chirp" phrases (last note clear and more or less musical whistle). Bird apparently alone.

6:14 Hear what may be Brown song in distant woods. "Twitter", but quite regular, with few or no fluctuations.

Then hear some more, similar song.

See maybe *Myiophobus* alone. Yellowish. Probably one of same birds seen earlier.

Then see what looks like a small all-black bird!! Possibly a slaty finch of the *Phryganeus*-type??

Rain getting worse 6:45 a.m.

See a single House Wren alone.

7:12. See another House Wren alone.

7:45 See another Orange-bellied Saltator alone.

Also one of the House Wrens seen earlier. Still alone.

Stop observations 8:10 a.m.

Brown
Brown

Large cloud trying to break away
Then we start to descend, 9:15 am
... ..
with some lots of bamboo debris

Brown
on

Rain settling down to a fine drizzle 9:27. Then fog comes on
There were Brown songs. All rapid "Twitter" with little fluctuations

Brown

9:30. Come to an area where there was at least 2 Brown song
Also hear one or two R-Za patterns 8300 ft. Fog settling in again

Brown

Then see a Brown song flight
Then see single Brown (different individuals) circled exposed a ft above
one ground, singing. Area very low but now there are

Brown

Songs of different individual Browns overlapping a lot.
Then see pair CC's alone. Silent. Look quite gray below. Feeding ab-

U

out 50 ft from where Brown sang a few minutes ago
Then hear what seems like CC twitters without seeing the birds
at the time.

U
highly

A few minutes later and a little further on, hear what may be then
"Sweet" Notes and/or Song Notes

Brown

Reach approx 7000 ft 10:20 am. Starting downhill
Come to another area where there seem to be a lot of Browns song
going. Browns seem to burst into song whenever fog lifts, a little, temporarily

U

10:26 am. 8350 ft. See a single Cyaloue Eating fruit in tree. Possibly
Cy. same type of fruit as one of the ones eaten above Chach-payas. Birds silent
Going to try again this afternoon. Rain has stopped. There are even
patches of sun from time to time
Reach 8600 ft 3:00 pm.

3:05. ... 3:05

1425 ft. ... Very thick with ...
... at least 1 ...
... with white supercilious ...
... (same species as ...), &
... more

Rain starts hard 4:15 pm

This mixed flock seems to be ... Difficult to see
Can tell who ... disappears in a few minutes

Rain stops 4:50

Here ... seem to be ...
3:15. ... were ...
exactly the same place ... still singing from time to
time. And ... other species. Unfortunately invisible

Then see flock. At least 3 birds. Possibly all one species now. Brasil
cutaneous types. One of the birds (at least) seems to be the "White stipe" seen
near Induavi. One of the birds (the same individual?) seems to have
white outer tail feathers. All the birds are quite quiet. Just occasional single
"CN"s. In thick scrub, 4-10 ft above ground

This group is very reminiscent of the mixed flocks near Induavi in
sofar as it doesn't seem to be getting anywhere.

Going to start gradually back toward hotel 5:35 pm

5:42. Hear what might be C Twitter. Composed of long series
rapid "Duh-de-duh"s. 8700 ft

6:01. See single Bmn singing alone. Song a fast formless Twitter
But not fluctuating

Arrive back hotel 6:55, without seeing anything more.

NOTES The environment around here is quite different from the rest of the mountain about the hotel, so the same birds as the latter are not seen, seems very damp. But not so much as I had expected. Extensive areas of that but not too much. Lots of bamboo. Some sizeable areas of grassy grass. Arboreal shrub pretty much comparable to Barranacas. The whole area looks like second growth. But I find it difficult to believe that such a steep slope was ever farmed (without terracing - of which there is no trace away from the ruins). In many places the slope is approximately 45° . And looking at even steeper slopes near the river, I see that they are covered by similar vegetation. So perhaps the (comparative) sparseness of the vegetation on this slope is due to its steepness and nothing else ??? But it is remarkable that the whole of the other side of this mountain, even the crest, seems to be covered with arborescent scrub (as far as I can see - which isn't too far). And at least one other mountain close by seems to have similar contrasts on the corresponding sides - one side with arborescent scrub and the other with low scrub and grass. And on the mountain here, at least, both slopes look equally steep. How can this be explained ???

This morning I certainly saw no traces of mixed flocks. While the rain & fog continued, the birds spent almost all their time hidden - presumably in protected sites under vegetation. Certainly nothing to support the idea that bad weather favors the formation of mixed flocks.

In connection with the hypothesis that mixed flocks may be an adaptation to frontier conditions, it should be noted that the 8000-7000 ft slopes around here go straight down, without interruption by agricultural land, to the scrub along the river valleys (the RR station is right beside the river and it bears a sign saying that its altitude is 1900 and so

nothing more). So the upper slopes here are as near the frontier as they could be. (It might also be noted that this region is quite far to the east, i.e. we are on the eastern border of the temperate zone as a whole.)

A thought has just occurred to me. Are mixed flocks particularly likely to be found where the humid temperate and upper sub-tropical zones merge smoothly into the humid lower sub-tropical and tropical zones ???

In connection with the hypothesis that species in the central Andes tend to be restricted to comparatively narrow, "specialized" niches, it may be significant that I have seen Cyp eating fruit so frequently here & in Chachapoyas. They may be outside the "regular" *Diglossa* niche in these regions.

February 17, 1964
Manchu Pichu

Going to work in same areas again this morning.

SEE TODAY'S NOTES ON MIXED DIGLOSSINI

Coming back toward hotel 8:30 a.m., 8500 ft. Come across a pair of W II, the "columbian tanager" species. Very similar to, or identical with, the Andean bird(s). Looking somewhat grayer above, but this is probably an effect of the rain. Today I notice that the sides of the neck (and head?) are chestnut like the underparts. Also that the bill is flesh-like (could there be "pink-capped finches" ???). The two birds were silent and alone. In area of low, thick scrub. Bamboo or with a few other things scattered about.

I must keep my eye out for this species. It may be a good example of a species that is gregarious (forming mixed flocks) near the southern

border of the humid temperate region but not in the humid
temperately speaking of "for ever". I think that warm
flashes are surprising in the zone, but how close to the
frontiers of the humid region we are here. I think close there are
patches of warmer climate vegetation etc. This is for us seem to be pecu-
arily characteristic of only the northern and southern frontiers of the humid
temperate zone (i.e. where there is actually frontier on all 3 sides),
not the eastern and western frontiers (alone).

This afternoon going to start working near hotel 2:30 p.m.
Rain has stopped and fog is partly lifted.

2:58 p.m. See a single cyanocephala alone. Slightly below hotel
In rather uneven scrub of moderate height, on the average.

3:55 p.m. See single House Wren alone near ruins
Then there is rain. Whole stops 4:30 p.m.

4:35. See a single Helminthophila alone. Definitely ruficeps. (I shall just
call this species "Orange-heads" from now on.) Slightly below hotel. Area of
thick low scrub.

5:15. See single cyanocephala alone. Possibly same bird I saw earlier
this afternoon. In small tree 6 ft above ground. Silent.

5:28. Just below hotel level. See a pair of the peculiar finch or tanager.
LI (I shall call these "Goldcaps" from now on. Moving thru low bamboo
thicket. About 2-3 ft above ground. Silent. Definitely alone.

Then see single cyanocephala alone again. Low thick scrub.
Possible connection. About 20 ft behind the cyanocephala is at least 1 Basil
euterus type. Either young rugosus or (more probably) luteovirens.
Definitely olive crown, but crown slightly darker (perhaps blackish) at edge of
yellow supercilious. Warbler may be following tanager. A minute later,

6) Cater's new bird (maybe of a single CC about 30-40 ft behind warbler.
Does + CC fly off + associating with the latter or not

5.13. Cater's good view of what may be same warbler(s). A pair together. Seems definitely adult (i.e. definitely not immatures). Yellow supercilious quite broad, but seems to end sandy abruptly behind eye. Legs flesh colored - fairly bright, almost coral. One or both birds very vocal. Uttering lots of thin but hoarse, rather loud, urgent sounding "see seee see seee seee seee seee"

Notes. Also occasional brief R's (hardly more than "Bump"s). In low-mut, also landing on grass verge of road. At this time, these warblers are not accompanied by, or accompanying either yanocyp hola or CC. But they are associated with one Orange head. Now together. Orange head apparently silent. At least once, warbler f → Orange head.

These warblers were so vocal that I am inclined to think they must have been adults (?). Appeared to be approximately same size as the Orange head. If I remember museum specimens correctly, this would indicate that they are Bauleuterus, not Hemispungus. (Their bill appeared to be moderately long - probably not too long for Bauleuterus.)

Stopping observations 6:00 p.m.

Why are there no Finbellies or Atlapetes around here? Too wet ???

February 18, 1964
Machin Piesher

Working above hotel, in same places as yesterday morning.
SEE TODAY'S NOTES ON MIXED DIGLOSSINI

2
The mixed mixed flock just over crest of ridge.
For long times now we just sit & get down hill.
not making much progress. So do suppose the mixed flock
at least somewhat, identical with the one seen at 7:30.

Ca. 7:30 a.m. Catch brief glimpse of what is left of mixed flock
or flocking party of the flock. In brief view, they are all
two Calamagrostis-type flocks (LXXII), one unknown type, possibly Junco
id. (LXXIII), and one Oenothera-type flock. They too are back at us and
retreat down hill.

7:50 a.m. Get a very good view of what is either the whole of the
mixed flock now, or the main body of the flock. Includes 2 Cys, 1 Cyanoc
cephala, 1 Buff and Blue Tanager (LXXV), 2 whiterails (Melanerpes
luc.), 3 "Local White-stripes" (LXXIV), and almost certainly one Seti
i. The two Cys, the cyanoccephala, and the Buff and Blue were in the
lead. Cy definitely f ———> Buff and Blue. There seemed to be a slight
but definite tendency for these three largely or completely blue species to
keep more or less together. These three were followed by the pair of whiterails,
2-20 ft behind all or most of the time. The whiterails definitely
followed and joined the three largely or completely blue species repeatedly.
The rear guard was composed of the Local Whitestripes. Definitely followi
ng the other birds. I think that a single Seti was associating with the
Local Whitestripes (It certainly was not associating with the other three
largely or completely blue species.)

The flock was not very noisy at this time. Lots of single "CN"s by
all or most members. Occasional R-type calls by the Local Whitestripes. Some
song by one or both whiterails.

All the birds were moving quite rapidly, in one direction (at

9
just), and quite close together. Flock as a whole much more coherent and
I never got 500 usual. I think that this was because they had run up
against the path, were following it up hill, and then (almost all of them) chose
to cross the path at the same point.

W When the Cap ran up against the path, they did not cross it when
the others did (later). They crossed it by flying diagonally down hill.
And all the other birds went down hill in the same direction as the Cap af-
ter crossing.

I think that the nucleus of this flock can be considered "semi-per-
manent"!

8:15 a.m. Catch brief glimpse of Alapetes schistaceus - like bird in
scrub, where the flock was earlier but is no longer. Rufous crown.
Quite dark medium gray below, blackish above. Didn't notice mount-
ain stupes.

ADDITION: All the birds in the flock observed 7:50 ranged thru
many layers of scrub, from approximately 3 to 20 ft above ground. The larks
and the whistlers probably stayed higher, on the average, than the others.

NOTE: It is beginning to look as if there is one "ideal color pat-
tern" for members of mixed flocks in the southern Andes. Gray blue above,
and buffy to chestnut below.

Going to go a different way this afternoon. Along a path which I
think will lead to Huayna Picchu eventually. Starting out 3:05 p.m. Sun
shining, of all things!

Nothing! 4:30 p.m. I suppose the little darlings are too hot!

4:35. See pair of Black & Blue Tanager in trees on very steep slope.
Definitely alone. This area is 8150 ft according to my altimeter now. Vegetation
on rocks "virgen". Short old twisted trees. Lots of moss.

6:25 am Bright dawn. In the valley see a pair of Jays.
In virgin looking woods. Altitude 4800 ft.
Cyanocapitata - how are we not obligate to name it!

J. J. May 22 1964
Humboldt Park

Lots of fog this morning. Going to some areas S. of
Huayna Picchu, near ruins of Machu Picchu. Very
Dawn hours starting 5:40 am. No display of sounds
Particular. This whole area, ca 4800-4900 ft seems to be quite lacking
in Dolomieu. Part of the vegetation looks second growth (bamboo etc.)
part looks "virgin".

June 27? See single Cyanocapitata alone 6:10 am
6:20. Hear something which sounds like brief snatches of Lafresnaye
sip song. Part way up slope Huayna Picchu 4900 ft

6:40 See a pair of Black & Blue Tanager same place as yesterday of
ternoon. At first alone, except for some Elaenia & Contopus-type flycatchers,
with whom they do not seem to react. Then associated with a pair of something
else, possibly Cyanocapitata. Then disappear.

A few minutes later, in low scrub under trees, see a single Atlapetes
of a new type. Yellow below, black above, yellow crown (slightly brighter than underparts, slightly orange-ub on forehead. No wing-patch.
Apparently alone. Uttering "CN"s.

This species quite reminiscent of "PR". It is no IXVI. I shall
call it "Yellow crown Atlapetes".

All this is at 8000 ft. A relatively large (for this mountain) pair

ced of very mixed birds from local old, some new, some trees, some low
2000

(U) 14.12 8000 ft. Beyond rather sparse scrub. Hear 2 unmated C's
C's without seeing the individuals uttering them. Then hear a few more
a few minutes later. No other points.

Reach area 2500 on top mountain 7:50 am. 8450 ft. Starting
down again.

(U) 7:55. Height under 8400 ft. Hear another C's singing. "Ta ta ta
zoo zoo zoo" type phrases.

(U) Possibly C's are breeding in this region. They certainly seem to be
reproductively disturbed than any of the other local defences.

(U) C's sing a lot like Horn Wren song.
See single Horn Wren above.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

Raining in the afternoon. Also fog coming up. Going to try working
just below hotel.

4:50. Come across pair of Pardaliparus luteoviridis types same place
as a couple of days ago. One or both still uttering hoarse "Teeee" Notes.
Both FB? Also occasional brief R's. Definitely alone until 5:08.

Barn 5:18. Hear what sound like Barn R's. See bird in silhouette in
bad light. Might well be Diglossa. But color looks wrong. Appears grayish
underneath.

See a single Orange-bellied alone.

(U) 5:38. See a pair of C's. At first with another bird (unidentified)
nearby. Then C's fly away. Other bird does not follow. C's utter several
al "Twitter" as "Greeting" when landing together. 7400 ft.

Ending observations 6:15 pm.

May 20
Goulds Cove

Heavy fog and rain 5:00 am - fog getting working near hotel and road leading down hill - but without much hope of getting results

6:14 See pair of Orange-heads alone In garden like area of some tall but scattered bushes right in front of hotel. Close at first then joined by single House Wren. No reaction between the 2 species. House Wren flies away. Orange-heads do not follow. This mixed flock obviously purely "coincidental".

6:20. Rain stopped, but fog still very thick.

Going down road with glimpses of several House Wrens apparently alone

Give up 7:40 am

Cy

8:50 am Hear Cy singing outside my room. In some strange phrases.

Then resume operations, as fog seems to be lifting.

9:00. See a single cyanocephala alone. In thick low scrub.

9:25 See a single Orange-bill alone

Sound

9:35 Hear Baw-like songs coming from same area as yesterday afternoon. Again can't see the bird. Rain & fog again!

NOTE: I am told that the wet season here is December-March

The real dry season is April-August

Going to try again 10:05 am

Rain starts again.

End

Get back to my room 10:30. Hear Cy singing for a long time. Phr

as after pleasure with the barest pains between

Q. ... after lunch

... is ... of a Presbitarius intermedius
... "house" ...
... more vocal than the intermedius - types near ... Is it the same
species?

Then get another plunger. Actually two birds. Quite alone

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

February 21, 1964
Machin, Pinal

Going to work above Machin Pinal this morning. Not the road
that goes to the west of the ridge. The one that is supposed to go to the peak of
Highland Pinal. Some fog. Otherwise clear.

Brown
7950 ft. Songs are ... Rather fluctuating

7
CORRECTION At least some of these Brown-like songs are being uttered
by a small grayish bird. (C ????)

Barn
See a single ♀ or juv. Barn alone 8150 ft. Region thick low scrub.

Silent

Probable overlap C and Barn territories or home ranges.

Barn
Dylosus songs much less frequent 5:38 a.m.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

6:40 8350 ft. See single female EXT alone. In low scrub

7:00 a.m. 8800 ft. Region of thick low mound growth. Hearing
singing. Also what sounds like whistling up hill. No overlap.

NOTE. In summer of 2000 I saw many about 1000 ft. above the lake
 it they seem to be relatively more at somewhat low elevations. A few
 few mixed flocks seen at relatively low elevations. This may also be true of
 y and relatively loosely organized. When we went to the lake in 2001
 organized flocks ca 1000 ft and higher. Above One flock quite low
 near Hudson flocks 10-20-4,000 ft. Are birds at 1000 ft more
 gregarious than birds at same elevation near Hudson? How is this
 significant? Are the different faunal birds just lower than
 near Hudson ???

Perhaps the most specialized inter-specific relations here is

(W) cyanocephala - Cy

Marine Bacteria Feb 14, 15, 16

Out and E fids 1964

No. Inds from Algae

III 1 (2)

No. Inds. in Flocks

(25) III III III III III

No. Flocks seen

III (3)

No. spp per Flock

4

4

9

No. H.O. Flocks seen

III (3)

(17)

Largest No. Inds. One Flock

14

Largest No. spp. One Flock

9

Marine Puffin Feb 16, 17, 18, 19, 20, 21
All other areas 1964

No. Inds. Seen Alone

|||||
||||| (6)

No. Inds. in Flocks

||||| (20)

TOTAL = 26

25. 25. 15

No. Flocks Seen

||| (6)

No. Spp. Per Flock

3

2

No. H.O. Flocks Seen

2

||| (3)

2

2

Largest No. Inds. One Flock

4

4

(15)

Largest No. Spp. One Flock

4

Wacker Packer 1904

Hours - West and East Sides

Feb. 15	1 hr	32 min
Feb. 17	2 hrs	12 min
Feb. 18	1 hr	45 min
Feb. 19	—	—
Feb. 20	—	—
Feb. 21	—	—

3 hrs 00 min

Wesley Packer 1964

Hours - All other areas

Feb. 16 2 hrs 00 min

2 hrs 00 min

1 hr 30 min

1 hr 00 min

Feb. 17

1 hr 00 min

0 hrs 30 min

3 hrs 15 min

Feb. 18

1 hr 00 min

1 hr 00 min

3 hrs 00 min

Feb. 19

3 hrs 00 min

1 hr 15 min

Feb. 20

0 hrs 30 min 1 hr

2 hrs 00 min

0 hrs 45 min

Feb. 21

3 hrs 45 min 1 hr 30 min

24 hrs

3 hrs 30 min

TOTAL = 27 hrs 30 min.

Southern Peru

February 22, 1964
Mr. Cuzco

Walking below Pisco this morning. Area where I fell in river last y
ear! Path begins at 9400 ft according to my altimeter now. Arrive 5:50 a.m.
Already light

See single Orange bell alone.

6:10. See a very big roosting thrush. Alone Orange bell & legs. No bright
eyering.

Brown 6:14. See what appears to be juvenile Brown. In narrow scrub along
migration ditch. Possibly not alone

Another single Orange-bell And another.

Brown? Have heard a few songs which might be Brown. Rapid, regular, non-
fluctuating Twitters

6:55. Another single thrush alone. Apparently same species

Quite a lot of Agave in flower near here. Don't see or hear any Bayers,
however

U Not far away see pair of CC's in hedge. Utter long very rapid Twitters as
"Greetings" Fly into tree next to agave, but apparently not into agave itself.

Brown 7:15. Slightly different area. See single Brown singing alone. Each song
phrase rapid twitter. Not very fluctuating. Descending "eyoo" at end. Phrases
much shorter and appreciably less rapid than CC "Greetings" twitters. This Brown
sings quite a lot of phrases one after the other. Intervening pauses of variable
length. Saw very thick and rather moist-looking hedges here. Brown in one he-
dge, 10-15 ft above ground

U CC's here are definitely very gray underneath here - except for under tail
& coverts

9600 ft. Going up stream. Come to area where there are lots of tubular red flowers. Some with holes in corollas. Also some pink trumpet shaped flowers. But no visible or audible differences.

Incidentally, this looks like very good area for Myiopsus. I wonder why there aren't any. Surroundings outside stream area too dry?

NOTE: Stream here is more flooded than when I was here last year.

8:05. See single Brown feeding (on insects?) alone in drier scrub along edge ravine.

There is a small hummingbird visiting tubular red flowers by stream. Could this bird be making the holes???

Hear what may be GC in distance.

Starting down hill 8:15 a.m.

See a single House Wren alone.

8:34. See another single Brown. Silent. Alone. Again in drier scrub toward edge of ravine.

8:50. Down almost to road level again. See another single Orange-bell alone.

Then see bright bonariensis. At first has dull bird, (which I think is P. garyi) with him. Then the latter disappears. Bright bonariensis perches in Eucalypt. Utters lots of TW phrases. "Wheet chu wheet chu wheet chu which".

After a minute or so, the sound of these phrases seems to stimulate an (unseen) presumed Brown, about 50 ft away. It also begins to sing. Tweets. Sometimes phrases of 2 species overlap; sometimes they alternate! Then the bonariensis shut up. And the presumed Brown does too!

It looked as if this Brown were "put up", desperate to react with something vocally. Probably not getting enough vocal stimulation from other diglossines in this area now.

Stopping observations 9.00 am.

The situation here this morning certainly appeared to be much the same as last year.

Would also seem to confirm my impression that the fauna of the central - south central Andean area is highly impoverished. Some of the areas visited this morning appeared to be perfectly suitable for *Troglodytes* and/or *Artibeus* sp. Also *Basilinna*-types. (And very common above & *Thryothorus* above.) Certainly, the region as a whole is not too wet!

This afternoon going to work along road parallel to RR to Machu Picchu. Peak baranca 11,625 ft. Some scrub. And then rain starts heavily! Lets up a little 3:25 pm. Going to get out and take a look

3:36. See a single *Colibri coruscans* alone.

Eucalyptus trees (apparently same species as at Gento) are in bloom here. Also where I worked this morning. But nothing seems to be using them but humming birds.

No sooner said than done. Something uttering loud Twitters in Eucalypt. Sounds like *Brun*. Quite a lot of phrases in fairly rapid succession.

Then see single *Brun* feeding on Eucalypt flowers for minutes on end. Looks rather dull. May be juvenile. Silent except for "CN"s while feeding.

Further on, see adult *Brun* in Eucalypt, 40 ft above ground.

Then presumably same bird sings quite a lot in distance.

Then see same or another *Brun* in tree again.

Brun (s) ignoring Black-headed Goldfinches same tree.

See single *Brun* fly by. Lands high in Eucalypt. Utters one Twitter.

Stops. As soon as it stops, a single *C* in dry scrub uphill utters one brief Twitter. No overlap. But it certainly looks as if the *C* were stimulated to sing by the sound of *Brun* song. *C*'s shuts up. *Brun* utters occasional Twitters &

Brun
Brun
Brun
Brun
Brun

Brown

during the next 3 minutes C remains quite silent then Brown starts up.

Brown

4:20 pm Presumed Brown sings again from tree to tree. No other diglossini visible or audible

CORRECTION? I think that this presumed Brown starts up, and probably moves into another tree, whenever a pair of Black headed Goldfinches (♂ & ♀) flies into the tree in which he is singing!!!

Leaving 4:40. Everything quiet.

Brown

NOTE: I don't think that I worked in this area last year.

all: Quite alone.

Brown

On my way out, see Brown fly out of small bush-like tree along stream.

This Brown was certainly surprisingly vocal this afternoon. Coming in (or out) of breeding condition?

San

Going to work in another area, 11,750 ft. Arrive 4:55 pm.

Lots of Eucalypts around here. Some scrub underneath the trees.

See a single Orange-bell along.

See a single Colinus cornucopia along.

Ending observations 5:30 pm.

February 23, 1964
Mr. Enzo

Going to work same place this morning as yesterday morning.
SEE TODAY'S NOTES ON MIXED DIGLOSSINI.